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ANALYSIS AND INTERPRETATION OF LIP-MOVEMENT IN READING

IN GRADES II-VI

Submitted by

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(A.B. Washington Missionary College, 1920)

In partial fulfillment of requirements for the

Degree of Master of Arts

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Chapter I

Introduction

Analysis and Interpretation of Lip-Movement in Reading

Introduction

Lip movement in reading has been and still is conceded by many to be an existing problem in the teaching of reading in the grades. Several years of experience in endeavoring to eliminate lip-movement by children has led the writer to question (1) how far one is justified in bringing pressure to bear in eliminating it, (2) when and how it should be eliminated, if at all, especially in the lower grades and (3) the extent to which it is or is not used in other school work.

A study of the available literature in this field as well as differences of opinion regarding some phases of lip-movements shows little concrete evidence to substantiate some of the conclusions drawn by the various authors. Some of the studies indicate that lip-movement should be eliminated entirely as early as the second grade, while others show little concern regarding it, while still others contend that it should not be stressed unduly. Most of the studies have been concerned with it in its relation to speed. A few have stressed comprehension as well. A detailed survey of the investigations appear in the following chapter.

The present study undertakes to ascertain:

1. What the correlation is between lip-movement and learning ability,

2. To what extent lip-movement is used in school work,

3. If the type of reading material has any influence on the amount of lip reactions,

4. If lip-movements increase or decrease from grade to grade,

5. What relationship exists between lip-movements and bodily reactions, and

6. To what extent lip-movements and bodily reactions can be controlled.

For the solution of these problems it was necessary to do some observational work with school children. Thus arrangements were made for such work to be done in the Kendall School of Belmont, Mass. The material presented in this piece of work is not intended to be all inclusive or conclusive, for it is duly recognized that there are greater possibilities in this particular field which are as yet untouched. The material which has been gathered and here presented has proved of real value to the writer, and it is hoped that it may prove of some benefit to those interested in the subject of lip-movements in reading.

Chapter II

Historical Background of Lip-Movement in Reading

Historical Background of Lip-Movement in Reading

Studies made in lip-movements date back as far as 1904 when Adelaide L. Abell carried on some experimental work relative to lip- movements. Her study was made on forty-one students at Wellesley in which she studied the reading rates of each. O'Brien [1] quotes from her findings thus in which she states that "this device (lip reading) which may assist in the comprehension of a strange word or of an obscure meaning is certainly a hindrance when it becomes habitual. The discouragement of a child's tendency to accompany reading by articulation is an evident pedagogical requirement." She would favor the discouragement of lip-movement in reading.

Another pioneer in the experimental work of lip-movement is Quantz who made an observational study on children as well as adults. His conclusion [2] was, "Lip-movement in any degree retards the rate of reading and that the stronger the tendency the slower the rate."

Both C. T. Gray and Edith Germane in their

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1. O'Brien, John Anthony Silent Reading The Macmillan Co., N. Y. 1921 p. 17

2. Gray, William S. Summary of Investigations Relating to Reading Supplementary Educational Monographs; University of Chicago, Ill. 1925 p. 137

experimental work tested not only rate in reading in its relation to lip-movement, but also comprehension. The results of Gray's experiment which he carried on for a period of 20 days for the purpose of decreasing the amount of vocalization, indicated that there was a loss in comprehension on the part of most of the pupils. Theisen points out that while this is true, yet it does not follow that vocalization increases comprehension. He feels that children trained in oral reading may lose in comprehension when first asked to read silently. He states further that we have no evidence that they will continue to suffer in comprehension if silent reading is substituted for oral reading.

Germane reports that those using lip-movements are handicapped in both speed and comprehension, those not using lip-movements excelling those using them by practically 13 per cent. These conclusions are based upon an experiment which Edith Germane carried on with 150 pupils

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1. Twentieth Yearbook of the National Society for the Study of Education Factors Affecting Results in Primary Reading - Vocalization Theisen, W. W. Part II p. 15-16

2. Op cit. Theisen, W.W. p. 16

3. Germane, Charles E. and Germane, Edith G. Silent Reading Row, Peterson and Co., N. Y. 1922 pp. 108-112

4. Germane, Edith G. "Relationship between speed and comprehension in silent reading." (An unpublished master's dissertation offered to the State University of Iowa in 1920)

in the 6th, 7th, and 8th grades. Two articles entitled "Peanuts" and "Tuberculosis" were used, the pupils being asked to read them through once as they would read a story. The time required for the pupils to read each article was recorded as each pupil completed the reading of the story. He then began immediately to answer questions on the story. Three teachers recorded the names of those who read with decided lip-movement. The rate of speed and the percentage of comprehension of both types of pupils were tabulated separately and compared. The findings from both of the articles read showed practically the same results.

Quantz, Huey, and Klapper believe that lip-movement is not an acquired habit but a reflex action, being an inherited physical tendency. Klapper says, "Pure visual reading is not normal but is a natural tendency to give expression to any idea in the mind." He with others holds that reading without lip-movement is an acquired art which must be cultivated. Several investigators maintain that there is a muscular reaction going on in the throat when lip-movement is not employed, although it is detectable only to the trained observer. Brooks says, "We must not suppose that if lip-movement is absent, inner speech is absent also. Inner speech is present in much of

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1. Klapper, Paul Teaching Children to Read
D. Appleton and Co., N. Y. 1926 p. 18

of our reading and thinking and illustrates the close connection between meaning and motor activity."

Comparisons have been made by some between the amount of lip-movement used by adults and children. The conclusions drawn by Brooks, Theisen and Quantz are (1) that children always use a large amount of lip-movement but that it disappears gradually and (2) that children always use more lip-movement in silent reading than adults do. Theisen feels that this is due to oral reading, since children employ oral reading more than adults do. Gray who experimented with children from the third grade to the eighth as well as with high school and college students found that vocalization was observed in a large percentage of the cases. He further says that it is apparent that the greatest amount of vocalization is present in the third and fourth grades. It is his belief that difficult passages may provoke vocalization movements and that certain readers will use such movements at the beginning of any new passage.

There seems to be little, if any, agreement among the various investigators as to when lip-movement should be

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1. Brooks, Fowler D. The Applied Psychology of Reading D. Appleton and Co., N. Y. 1926 pp. 50,51

2. Op. cit. Theisen, W. W. p. 16

3. Gray, Clarence T. Deficiencies in Reading Ability, Their Diagnosis and Remedies D. C. Heath and Co., N. Y. 1922 p. 159

discontinued, although most of these agree that it should be eliminated. Both Gates and Brooks believe that it is unwise to make children over anxious to eliminate it. The latter is inclined to believe that it interferes with the comprehension. He says, "Above the third grade vocalization retards the rate of reading. Too early suppression may hinder the effective apprehension of the meaning of individual words. Too rapid elimination may interfere with comprehension." [1] Gates says, "To eliminate articulation completely in those who show it in excessive degree is neither necessary nor advisable. It is only useful to abbreviate the action of the speech organs. A slurred vocal-motor accompaniment of reading should not interfere with rapidity in reading." [2] He suggests that oral reading be eliminated for a while and silent reading substituted in its place, since the reduction of articulation will make for greater speed. C. T. Gray writes, "Vocalization should have no place in reading except in the case of a very few pupils." Anderson and Davidson in their book say that there should be few, if any, who

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1. Op. cit. Brooks, Fowler D. p. 50

2. Gates, Arthur I. The Improvement of Reading The Macmillan Co., N. Y. 1928 p. 230

3. Op. cit. Gray, Clarence T. p. 105

4. Op. cit. Gray, William S. p. 137

use lip-movements by the end of the second grade. Wendrich's, according to Gray,[1] found that there was no appreciable difference as to the rate of reading by those who used lip-movements and those who did not in the first grade, but that in the eighth grade those who used lip-movements read more slowly than those who did not. Theisen[2] says that vocalization during silent reading is common among primary children. Some suggest that there should be no lip-movement after the third grade.

A recent study in the field of lip-movement was carried on by Pollock and Pressey.[3] From a survey of the First Avenue school in Columbus, Ohio, ten cases were selected for intense study. These ten children were paired on the basis of their intelligence, every pair having practically the same intelligence score. Each pair included a good reader and a poor reader. Reading tests consisting of seven paragraphs devised by one of the authors were used. A paragraph was used for a single reading "habit." One of the habits tested was lip-movement and vocalization. The amount of lip-movement was tested on a five point scale as

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1. Anderson, Charles J. and Davidson, Isobel Reading Objectives Laurel Book Co., N. Y. 1928 p. 94

2. Op. cit. Theisen, W. W. p. 16

3. Pollock, Martha C. and Pressey, L. C. An Investigation of the Mechanical Habits in Reading of Good and Poor Readers. College of Education, Ohio State University Educational Research Bulletin Vol. IV No. 13 pp. 273-275, September 23, 1925

follows: "A score of 5 meant no observable movement or vocalization; 4 meant only occasional movement; 3 meant overt lip-movement but no sound; 2 overt movement and audible pronunciation of hard words; 1 audible pronunciation of every word." [1]

The object of the study was to ascertain whether factors other than intelligence influence reading habits. The results showed that the good reader is distinctly superior to the poor reader of the same degree of ability. They say, "On the average the good readers . . . show less lip-movement and vocalization. They read faster silently and orally; they save nearly half of the time by silent reading, showing a suppression of vocalization." [1]

1. Pollock, Martha C. and Pressey, L. C. An Investigation of the Mechanical Habits in Reading of Good and Poor Readers College of Education, Ohio State University Educational Research Bulletin Vol. IV No. 13 pp. 273-275, September 23, 1925

Chapter III

Detailed Plan of the Problem

Detailed Plan of the Problem

Plans were made to gather the desired data from the children at work under varying circumstances. The children used for the study were those of the "B" group of grades 2-6 inclusive, making a total of two hundred one children observed. The classification of the children by grades in the school system being observed was accepted by the writer for this study. The second and third grades are divided into three groups, "," "B," and "C," while grades 4-6 inclusive have but two divisions, "A" and "B." These divisions were made on the basis of the results obtained from the Kuhlmann-Anderson[1] tests. Group "A" is comprised of children showing exceptional ability for school work, group "B" those with average capacity for learning, while group "C" is made up of those children showing inability to do standard work according to their chronological age.

First of all observations were made during the time the Gates Primary and Silent Reading[2] tests were

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1. Kuhlmann-Anderson Tests for Grades II-VI The Educational Test Bureau, Inc., University and 15th Aves., S.E., Minneapolis, Minnesota

2. Gates Primary Reading Test Grade II, Type II, and Gates Silent Reading Test Grades III-VI, Types C and D Bureau of Publications, Teachers College, Columbia University, New York City

being administered. The writer was situated in such a position in the room as to be able to see each pupil while at work. A detailed record was kept of each child in each row who resorted to lip-movements, either occasional or continuous, facial reactions and head movements.

The technique used in making this study includes some of the items, with a modification of the phraseology, as found in the Pollock-Pressey[1] study referred to in chapter II. Head movements and facial reactions were not included in the foregoing study nor in any other study on the subject of lip-movements.

Following is a sample of the detailed record which was kept for each child involved and the particular situation under observation:

Kendall School - Belmont, Mass.

February 6, 1933 — Poetry-Reading

Grade 4 B — Material read silently and then discussed orally afterwards

Number of children - 41

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1. Pollock, Martha C. and Pressey, L. C. An Investigation of the Mechanical Habits in Reading of Good and Poor Readers. College of Education, Ohio State University Educational Research Bulletin Vol. IV No. 13 pp. 273-275, September 27, 1925

Row	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
	Occasional						Continuous						Hard Words					
											7	7						
		6	6															
	5							5	5		5							
		4								4		4						
	3								3	3								
					2		2		2									
									1									
	Every Word						Head Movements						Facial Reactions					
														6f				
														5f	5f			
								4s				4s		4f			4re	
									3s									
													2f					
									1s				re					

Note: The numbers appearing in each row under the items occasional, continuous, etc. refer to the number of the child in each row.
f - frowning
s - side movement of the head
re - raised eyebrows

A check was made with the teacher afterwards to secure the names of the children involved, so as to make careful analysis of each child if necessary. All the data was tabulated and compiled in forms like the following from which material has been obtained for the tables appearing in the ensuing chapter as well as those in the Appendix.

Name of the school

Date

Grade

Number of children

Number of children using occasional lip-movements

Number of children using continuous lip-movements

Number of audible pronunciation of hard words

Number of audible pronunciation of every word

Number of head movements

Number of facial reactions

The next step in the study was that of securing data from the very same groups of children working under the natural schoolroom silent reading situations. Aside from the regular silent reading class work, factual and story, the subjects of arithmetic, history, penmanship, spelling and poetry were chosen for this purpose. The object of including subjects other than the regular reading classes was to ascertain what the relationship is in the amount of lip-movements employed in these situations as compared to the regular reading class work. It was desirable to know, since previous studies show no work of this type having been done, if the children employ lip-movements only during the time of the silent reading class work, or if it carries over to the other schoolroom activities as well. The same observation technique was used as that for the Gates Primary and Silent Reading tests. A record was also kept of the type of recitation conducted, with the reactions on the part of the group being observed.

It was also desirable to know if lip-movements, head movements and facial reactions could be controlled or eliminated and to what extent. Time and circumstances did not permit individual testing of all the two hundred one children observed under the group observation work, and no selections were made. Sixty children were chosen, twelve from each of the grades 3-6 of the "P" divisions. The selections made varied somewhat with each group but on the whole an equal number of children were selected from each of the following groups, (1) those who used lip-movements, head movements and facial reactions extensively, (2) those who made use of them only moderately, and (3) those who used them very seldom, during the group observational work.

For the individual testing the subject of reading alone was used. Each child was taken by himself and given selected material[1] to read according to his grade level. The paragraphs read by each grade for each of the three types of reading material, the Oral Reading-Voluntary Control, the Oral Reading and the Silent Reading-Oral Loss Inventory as found in the Appendix are as follows:

Grade 3 ---- Paragraphs 1, 2 and 3

Grade 5 ---- Paragraphs 2, 3 and 4

- - - -

1. The material used was made possible through the courtesy of the Boston University Clinic. These appear in the Appendix on pages 82 - 90

Grade 4 ---- Paragraphs 3, 4 and 5

Grade 5 ---- Paragraphs 4, 5 and 6

Grade 6 ---- Paragraphs 5, 6 and 7

The three paragraphs for each of the grades represent different levels of reading work; namely, paragraph one easy material, paragraph two normal reading material and paragraph three difficult material for the grade involved or tested.

The technique used for the individual testing work is as follows:

Name of the school

Date

Grade

Name of the child

Oral Reading

Time
Phrasing
Errors
Comprehension

Silent Reading - Natural

Time
Habits
Comprehension

Silent Reading - Controlled

Time
Habits
Comprehension

Note: A detailed sample record appears in the Appendix on page 65. Composite tables showing the data on the sixty children are also to be found in the Appendix.

Each child was tested individually upon the three types of reading, oral, natural silent reading, and controlled silent reading corresponding respectively to the Oral Reading - Voluntary Control, Oral Reading, and Silent Reading - Oral Idea Inventory. The child was first asked to read the three paragraphs of the Oral Reading - Voluntary Control material aloud. A signal was given for him to begin and then as he finished the time required to read the material was recorded. During the time the reading was being done, observations were made to note any errors which were made as well as faulty phrasing. A record was also made of these after which his comprehension was tested. This was done by the means of questioning. This oral reading served as an inventory to ascertain the reading difficulties of each child as well as the amount of time required to read the material orally.

After reading the oral selection he was then asked to read the three paragraphs of the selection, Oral Reading, silently. Since no mention was made concerning lip-movements, head movements and facial reactions it has been called the natural silent reading situation. Any noticeable habits observed during the reading of the selection and the time required to read it were recorded. Questions were asked to ascertain how much he had remembered of the material read, and a record made. Then before

the three paragraphs of the third selection, Silent Reading - Oral Idea Inventory, were read he was reminded of the use of lip-movements, head movements or facial reactions during the reading of the previous selection and asked to endeavor to refrain from the use of such during the controlled silent reading situation. This has been termed the controlled reading situation. The time and any noticeable habits were also recorded for this selection. After being questioned on the material read a record was made.

Chapter IV

Group Observations

Group Observations

Lip-movements are more generally thought of in connection with silent reading as a subject in the school curriculum. Is this the correct point of view? Is this the only time they are used in school work? Surely not, for silent reading is used in all school work where reading is involved. It is easy enough to think of them in this narrower sense. The studies which have been made, as was noted previously in Chapter II, have been conducted with only this one subject in mind. The other school subjects have not been taken into consideration. It seems a mistake to think of lip-movements only in the light of the subject of silent reading, for many times the application of reading to the other phases of school work is in some respects different than that to be found in the regular reading books or classes.

In the present chapter an endeavor will be made to show the relation of lip-movements to varying reading situations. A comparison is made of the number of children who used lip-movements in the test situation with those who used them in the natural schoolroom situations. Facial reactions and head movements in each situation are also considered. Data from which the tables have been made are to be found in the Appendix.

Lip-Movements and Different Reading Situations

In this section a study is made of the number of children in the different grades who resorted to lip-movements, either occasional or continuous during the time observations were being made on both the Gates Silent Reading Tests and the Natural Schoolroom situations. Two tables appear in place of one, since the type of the Gates Reading Test for Grade 2 is different from that for the other grades.

Table I

A Table for Grade 2, Showing the Comparison of the Number of Different Children Using Lip-movements in the Gates Silent Reading Tests as Compared with the Natural Schoolroom Situations

	Occasional	Continuous	Total
Gates Test Type III	7	18	25
Spelling	2	9	11
Arithmetic	0	21	21
Story-Reading	7	11	18
Factual Reading	3	13	16

Note: Data do not appear for Types I and II of the Gates Primary Reading Tests, for after gathering data on them, a more detailed technique was chosen for the study.

From Table I it is to be noted that Spelling shows the least number of lip-movements since only eleven of the thirty-five children used them. Arithmetic which shows a total of twenty-one, the highest number used in

the natural schoolroom situation, is more comparable to the test situation. It is also to be noted that, whenever the children did use lip-movements in doing the arithmetic work, they were all continuous. It is possible that this can be explained on the basis of the type of recitation used. The lesson was conducted in the form of a race. Each row chose the name of some automobile. The game was to see which row would be the winner in the race. When the teacher gave a signal for the children to begin on the list of examples previously given, each worked very diligently to see who would be the first to stand, for the first one standing had the opportunity to report first. Each one seemed anxious to be first, thereby hoping to accumulate a score for his row. It is very evident that this type of lesson would more nearly approach the test situation as shown on the Gates Primary Reading Test.

Combining the results of the test situation and the natural schoolroom situation there is a total of ninety-one lip-movements used by the second grade. Of this number nineteen or 20.87 per cent are occasional, while seventy-two or 79.12 per cent are continuous, a difference between the two of 58.25 per cent. These results show that the children of the second grade use continuous lip-movements more than occasional lip-movements.

Table II

This Table for Grades 3-6 Shows the Comparison Between the Number of Children Using Lip-movements in the Gates Silent Reading Tests and the Natural School-room Situations

	Occasional				Continuous				Total by grades				Grand total for all grades
Number of pupils in each grade	39	41	43	43	39	41	43	43	39	41	43	43	
Grade	III	IV	V	VI	III	IV	V	VI	III	IV	V	VI	
Gates Test Type C	7	2	3	5	13	13	9	8	20	15	12	13	60
Gates Test Type D	10	5	5	5	9	12	8	7	19	17	13	12	61
Penmanship	12	6	8	3	0	0	0	5	12	6	8	8	36
Spelling	0	0	4	2	8	8	5	4	8	8	9	6	31
Arithmetic	7	5	6	4	10	9	5	5	17	14	11	9	51
Story-Reading	9			6	3			2	12			8	20
Factual Reading (History Gr.4,5 &6		8	7	5		9	2	5		17	9	10	36
Poetry		6	2	1		12	10	7		18	12	8	38

Note: Data do not appear for Types A and B of the Gates Silent Reading Tests, for after gathering data on them a more detailed technique was chosen for the study.

Table II shows that for test C the total number of occasional lip-movements is seventeen, or 28.33 per cent of sixty, the total number of lip-movements for the test. Of the total of sixty-one lip-movements for test D, there are twenty-five, or 40.98 per cent occasional

lip-movements. These results show that more children used occasional lip-movements on Type D than on Type C. In Type C forty-three, or 71.27 per cent of the total of sixty children who used lip-movements, used continuous lip-movements. There is a total of thirty-six children or 59.01 per cent who used continuous lip-movements in Type D. This means that 12.05 per cent more children used continuous lip-movements on Type C than on Type D. By grades there is a difference of only one or two on the two tests. The figures also show that more continuous than occasional lip-movements were used in the two tests.

While the number of occasional and continuous lip-movements differ somewhat by grades for the two tests, yet, there is a difference of only one in the total number of lip-movements for each of Type C and D tests. This is not at all surprising since the tests are very similar in nature. Type C tests the ability of the child to follow precise directions, while Type D tests for details.

In the schoolroom situations the arithmetic, factual-reading, and poetry approach the test situation. Of the fifty-one children who used either occasional or continuous lip-movements, seventeen were in the third grade, fourteen in the fourth, eleven in the fifth, and nine in the sixth. These figures show a decrease in the

number of lip-movements from grade to grade. Comparing these figures with the test situation, there is by grades a decrease of from one to four as compared with Type C, and two to three as compared with Type D. Factual-reading shows a total of thirty-six children using lip-movements, either occasional or continuous. Of this number there are seventeen in the fourth grade which is the same as the number on test D for this grade, and two more than for test C. In the fifth grade there are three and four less than for Types C and D respectively. The sixth grade shows a difference of three for Type C and two for Type D. Of the thirty-eight children (in Grades 4-6) who used lip-movements, eighteen are in the fourth grade. This is three more than is found in the Type C test and one more than Type D. The twelve in the fifth grade is the same as the results for Type C and one more than for Type D, while the sixth grade shows a decrease of five and four as compared to Types C and D respectively.

The results for the remaining subjects tell a different story. Penmanship shows a total of thirty-six children using lip-movements which is only three-fifths as many as those using them on either of the Gates tests. Only thirty-one children in spelling used them. This is slightly more than one-half of the number of children using them on either of the Gates tests. Since, in the story-reading situation, scores appear for only the third

and sixth grades, it is difficult to draw any definite conclusions. However, the twelve for the third grade and the eight for the sixth grade would indicate that the results for this type of reading might be comparable to the spelling situation.

The above results show that the number of children using lip-movements in arithmetic, poetry and factual-reading are comparable to the test situations, while penmanship and spelling show from 40-50 per cent less lip-movements than the test situation. By grades the results show, with the exception of penmanship and spelling, a decrease from grade to grade in the number of lip-movements used.

Penmanship, story-reading, and factual-reading show more occasional than continuous lip-movements, for penmanship has thirty-one occasional against five continuous, story-reading fifteen occasional against five continuous, and factual-reading twenty occasional against sixteen continuous. For spelling, arithmetic and poetry the story is just the opposite, for spelling shows nineteen more continuous lip-movements than occasional ones, arithmetic seven more and poetry twenty more.

For these children it is to be seen that more continuous lip-movements are used for spelling, arithmetic and poetry. The results also show that arithmetic, factual-reading and poetry more nearly approach the results

of the test situation, while penmanship, and spelling show the least number of lip-movements. The results for the latter may be explained on the basis that the children were more concerned with the formation of each letter in the word than in the reading of the words, except where sentences were involved.

It is quite apparent from these results that children do tend to use lip-movements to some extent in school work as well as in test situations. Although many of the investigators state that lip-movements should not be used above the second or third grade, this investigation shows that the children in these grades, as well as those above, do make use of them. However, the results seem to indicate that there is a gradual decrease from grade to grade. We would conclude also from the above results that the children who use lip-movements use more continuous than occasional ones.

Lip-movements in Relation to the IQ

Comparisons are made in Table III of the number of children, in both the Gates test and natural school-room situations, who used lip-movements in the Upper and Lower quartiles. These have been based on the IQ to ascertain if more children whose IQ's are low use lip-movements than vice versa.

Table III

Number of Children in the Upper Quartile of Intelligence Quotients Using Lip-movements in Gates Tests and School Work as Compared with the Lower Quartile

	Gates Tests		School Work		Gates Tests and School Work		Gates Tests but not School Work		School Work but not Gates Tests		Total No. of Children Using Lip-movements	
	LQ	UQ	LQ	UQ	LQ	UQ	LQ	UQ	LQ	UQ	LQ	UQ
Grade 2	4	9	9	8	4	7	0	2	5	0	9	9
3	6	6	7	2	6	1	1	5	1	1	8	7
4	6	5	10	7	5	5	0	0	4	2	9	7
5	1	3	6	5	1	3	1	1	5	2	7	6
6	6	5	6	6	4	3	1	1	2	1	7	5
Total	23	28	38	28	20	19	3	9	17	6	40	34

Note: LQ--Lower Quartile of Intelligence Quotient
UQ--Upper Quartile of Intelligence Quotient

Of the totals in the Gates test situation five more children used them in the Upper than in the Lower

quartile. In the regular schoolroom both the results are the opposite. Two more use them in the Lower than in the Upper Quartile. For both the Gates test and schoolroom situations the number in the Upper quartile is the same, while the schoolroom situation shows fifteen more in the Lower than in the Upper quartile.

In the test situation the second and the fifth grades show more in the Upper than in the Lower quartile. There is a difference of five in the second grade and two in the fifth grade. Each of the fourth and sixth grades show a difference of but one child more in the Lower than in the Upper Quartile, while the third grade shows the same, six in each. These figures show that in a test situation more children with high than with low I.Q.'s used lip-synonyms.

The sixth grade, with but six in each of the Upper and Lower quartiles, is the only one in the natural schoolroom situation that does not show more children in the Lower Quartile. Each of the second and the fifth grades show one more, while the third shows five more and the fourth three more in the Lower Quartile.

Twenty children in the Lower Quartile used lip-

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Note: The I.Q.'s based on the Kuhlmann-Anderson Tests are to be found in the Appendix.

...ements in the test situation and continued to use them in the schoolroom situation, while nineteen children used them in the Upper Quartile. This means a difference of only one child more in the Lower Quartile. Only three children, who used lip-movements in the Otis test and not in the school work, used them in the Lower Quartile. This is only one-third as many as the number who used them in the Upper Quartile. The figures are just the opposite for those who used lip-movements in the schoolroom situations but did not use them in the Otis test situation, for almost twice as many used them in the Lower as compared to the Upper Quartile. Of the total number of children who used lip-movements in the two Quartiles, almost 10.3 per cent more children used them in the Lower than in the Upper Quartile.

To conclude from the results for these children that, regardless of the IQ of the child, he may resort to lip-movements in either a test situation or natural schoolroom situation. Also in the test situation one children whose IQ's are high used lip-movements than those whose IQ's are low, while under the natural schoolroom situations the opposite is true.

Up-movements in Relation to the Gates Reading Test Scores

The average reading test scores for the Gates, [illegible] and Gilmore Reading tests were used in making the comparisons of the number of children in the Upper and Lower quartiles who used Up-movements in the test situation and the natural school-room situation. The numbers in each column represent the actual number of children who used them in each situation.

Table IV

Number of Children in the Upper Quartile of Gates Reading Test Scores Using Up-movements in Gates Tests and School Work as Compared with the Lower Quartile

Grade	Gates Test LQ	Gates Test UQ	School Work LQ	School Work UQ	Both Gates Tests and School Work LQ	Both Gates Tests and School Work UQ	Gates Tests but not School Work LQ	Gates Tests but not School Work UQ	School Work but not Gates Tests LQ	School Work but not Gates Tests UQ	Total No. of Children who used Up-movements LQ	Total No. of Children who used Up-movements UQ
2	6	7	2	7	3	6	1	1	3	1	5	5
3	7	3	3	7	6	3	1	1	2	2	3	6
4	5	1	10	3	5	3	0	1	5	3	10	5
5	2	3	2	3	1	1	2	1	3	1	4	3
6	7	5	7	3	3	3	0	2	4	0	7	5
Total	27	19	24	23	18	16	4	6	17	7	29	24

Note: LQ -- Lower Quartile of Gates Reading Test scores
UQ -- Upper Quartile of Gates Reading Test Scores

Table IV shows that in the test situation twenty-

pairs children in each of the Upper and Lower quartiles used lip- movements. Each of the third, fourth, and fifth grades shows one more child using them in the Lower than in the Upper quartile. In the second grade one more child used them in the Upper than in the Lower quartile, while in the sixth grade there is a difference of two children, these in the Upper quartile.

The number of children using lip-movements in the natural schoolroom situations is also compared to the average score which was made in the Gates Primary and Silent Reading tests. Of the total number of children who used lip-movements in the Upper and Lower quartiles in the regular school work, eight more are found in the Lower than in the Upper Quartile. Noting the number of children who used them in the two quartiles, all of the grades except the fifth show more in the Lower than in the Upper quartile. In each of the second and third grades the difference is only one, while in each of the fourth and the sixthe difference is four.

Of the total number of children who used lip-movements in the Gates tests and continued to use them in the school work, there is only a difference of three children more in the Lower than in the Upper quartile.

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Note: The average reading test scores based on the Gates Primary and Silent Reading tests are to be found in the Appendix.

Audible Pronunciation of Words

In school work, do many children make use of audible pronunciation of words? Are they used continuously or only occasionally? Does the grade influence the number used? And can they be controlled? The following table with its explanation provides an answer to these questions.

Table V

Comparison by Grades of the Number of Children Using Audible Pronunciation of Words on the Gates Primary and Silent Reading Tests with the Natural Schoolroom Situations

Grade	Audible-Hard Words		Audible-Every Word	
	Gates Test	Natural Situation	Gates Test	Natural Situation
II	3	0	2	1
III	1	0	1	0
IV	0	1	0	0
V	1	0	2	0
VI	0	0	0	0

From the above table it is to be noted that five children used audible pronunciation on difficult words in the Gates Primary and Silent Reading test while only one, not of the five children, did so in the natural schoolroom situation. This makes a decrease of 100 per cent on the part of the five children. Five other children pronounced every word audibly during the test situation while only one of the five did so in the natural schoolroom situation,

making a decrease of 30 per cent.

Of the entire group of two hundred one children of Grades 2-6 only two of them resorted to audible pronunciation of words in the natural schoolroom situations over against ten who used them in the Gates Primary and Silent Reading tests. Since one child in the fourth grade used audible pronunciation of difficult words in the natural schoolroom situation and did not in the test situation there is a total of eleven children out of the two hundred one who resorted to audible pronunciation, either continuous or occasional. Of this number five of the children are in the second grade, two in the third, one in the fourth, three in the fifth, and none in the sixth. From these figures it is to be seen that five, or practically half, are in the second grade. It is evident that audible pronunciation of words is not a vital problem with these children in the teaching of reading, especially above the second grade. We would conclude, also that these children tend to make use of the audible pronunciation of words more often when placed under a test situation.

Head Movements and Facial Reactions

In this section of the chapter a study is made of the head movements and facial reactions on the part of the one hundred one children who were observed in the Gates test situation and natural schoolroom situations. Table VI shows the data on the Gates test while Table VII shows the data for the schoolroom situations.

Table VI

A Distribution of Head Movements and Facial Reactions Made by Children in Grades 2-6 The Head Movements in the Gates Primary and Silent Reading Tests

Gates Test Type	Head Movements III	C	D	Facial Reactions III	C	D	Total No. of Children
Type II	4			0			35
III		2	3		2	4	30
IV		3	2		3	4	41
V		2	3		3	3	43
VI		2	2		3	3	43

Table VII

A Distribution of the Head Movements and Facial Reactions made by Children in Grades 2-6 Inclusive of Lip-movements in the Natural School-room Situations

	Head Movements						Facial Reactions						
Grade	Penmanship	Spelling	Arithmetic	Story-Reading	Factual Reading	Poetry-Reading	Penmanship	Spelling	Arithmetic	Story-Reading	Factual Reading	Poetry-Reading	Total No. Children
II		6	5	10	4			3	7	6	6		35
III	5	4	5	5			10	5	9	4			30
IV	5	2	3		3	2	6	6	5		7	6	41
V	3	4	3		4	3	7	3	10		7	2	43
VI	3	2	2	6	3	3	6	5	2	4	4	3	43

The data in Table VI show a variance of from two to five children who used head movements in the test situation. Four, or 11 per cent, of the thirty-five children in the second grade used them on Type III test, the only test for which data appears. Test C for grades 4-6 shows a total of nine children who used them while test D shows a total of twelve using them. The same two children in the third grade who used head movements on Type C made use of them on type D also, with the addition of three more

using them. Only one child in each of the fourth and sixth grades used them on both types of tests while in the fifth grade two of the children used them on both types. This makes a total of six children, or 26.67 per cent, of type C and 50 per cent of type D in grades 3-6 who used head movements on both types of tests.

In the natural schoolroom situations the greatest number of head movements used more often, which are found in the second grade in the story-reading situation. This represents 28.57 per cent of the children in the grade. The next highest is also to be found in the second grade in the spelling situation, for here six children, or 17.14 per cent of the entire grade, used them. The next highest number of head movements is five which appears in each of the grades except the fifth where the highest number is four. The five for the second grade represents a greater per cent than the five for any of the other grades since there are less children in this grade. The per cent for the second grade is 14.28, for the third grade 13.51, the fourth 13.19, and for the sixth 11.62 per cent.

From these figures it is to be seen that for these children the greatest number of head movements, which is small, is to be found in the second grade in the natural schoolroom situations. The results also indicate a decrease in each grade, from the second to the sixth, in the per cent used, as well as less head movements in the test situation than in the natural schoolroom situations.

In the different schoolroom situations the story-reading situation shows the greatest number of head movements. By grades the subjects which show the greatest number of head movements are as follows: story-reading in Grade 2, penmanship, arithmetic and story-reading in Grade 3, penmanship in Grade 4, spelling and factual-reading in Grade 5, and story-reading in Grade 6. These data show that not any one subject necessarily shows more head movements than any other. While story-reading is common to Grades 2, 3 and 6, yet, no definite conclusions can be drawn since data for story-reading do not appear for Grades 4 and 5.

Of the facial reactions in the test situation there are more to be found in the second grade since nine out of the thirty-five children used them in Type III, the one test for which data is shown. Aside from the second grade the per cent making use of them in the other grades in either test C or D varies anywhere from .05 per cent, the lowest, which is found in the third grade, to the highest, 12.19 per cent found in the fourth grade.

In the natural schoolroom situations the story is a bit different, for 25.64 per cent, the highest per cent, is found in the third grade with the lowest, which is .046 per cent in the fifth and sixth grades. By grades the greatest number of facial reactions are: story and factual-reading in Grade 2, penmanship in Grade 3,

factual-reading in Grade 4, arithmetic in Grade 5, and penmanship in Grade 6. The least number of facial reactions are to be found in spelling in Grade 2, story-reading in Grade 3, arithmetic in Grade 4, poetry-reading in Grade 5, and arithmetic in Grade 6. These figures would indicate that the subject does not affect the number of facial reactions used on the part of these children (the two hundred one) who were observed.

Of the types of head movements manifested on the part of the children, the most common ones were those from side to side, forward nodding, and the twisting of the head. Where the sideward movement was used, it was a case of moving the head as well as the eyes across the page during the time of reading. The forward movement was used in conjunction with the figuring out of the difficult words.

"The facial reactions were legion, as frowning, smiling, pinching and puckering the lips, raising the eyebrows, protruding the tongue, using the lips to form letters, twisting the mouth and nose, and an expression of intent interest. Trow says: 'A teacher, for example, should be able to detect the signs of rising wrath, of disappointment, of attentive interest, or of dislike and dissatisfaction on the pupils' faces; and some can do this

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Trow, William Clark Educational Psychology Houghton Mifflin Co., N.Y. 1931 p. 58

with [illegible] facility.' It is to be concluded from this statement that such facial reactions are an index to the child's reactions to the material being read.

Some of the children were very expressive in their facial reactions while others were more inclined to be passive, with only a slight reaction now and then. While data would be easy to obtain to show that not only those who use lip-movements use facial reactions and head movements, yet this study does not contain such data.

Chapter V

Individual Testing

Individual Testing

During silent reading, is it possible for children to control lip-movements, facial reactions, and head movements? If so, to what extent? Does oral reading control [illegible] more than silent reading? Are lip-movements used only when reading difficult passages? The purpose of the Individual Testing was to find answers to these and similar questions related to silent reading.

The present chapter treats of the data gathered on the Individual Testing work. All of the children chosen for this purpose were those who had used lip-movements in the Group Observation. Most of them also used head movements and facial reactions in the group work. The details of the procedure for the Individual Testing were given in Chapter III on the Detailed Plan of the Problem.

Table VIII

This Table Shows the Types of Errors Made by the Children of Grades I-C in the Individual Oral Reading Test

Insertion of words	1
Faulty enunciation	1
Omission of words	2
Repetition of words	2
Punctuation overlooked	4
Mispronunciation of words	10
Substitution of words	30
Number making no errors	33

The total number of errors listed plus those omitted in errors exceed sixty, the number of children tested. [illegible] to be recorded for an individual that some children made more than one error. "Dad" and "Bad" were the most common words omitted. Such words as the following were among the substitutions made: boy for Bob, Mike for the, Mac for Mat, somebody for something, [illegible] for basket, and kittens for kites. [illegible] substitution for "a" [illegible] boy for Bob. In most cases the substitution made more sense as read, and like the words for which they were substituted.

The fact that twenty-three children out of sixty, or 38.3 per cent, made no noticeable errors may be an indication that [illegible] was poor. It is true that some of these made a few errors during the course of the reading, but corrected them unaided and so they were not recorded. It is very evident that only reading can proceed without [illegible] made by careful children.

Table II

A Table to Show the Types of Errors Made by the Children in the Individual Oral Reading Test

Grade	2	3	4	5	6	Total
Addition of words				1		1
Faulty enunciation		1				1
Omission of words	1				1	2
Repetition of words					2	2
Punctuation of words	2	1	1			4
Mispronunciation of words		1		2	7	10
Substitution of words	8	5	7	8	6	30
Total number of errors	11	8	4	11	16	50
Number making no errors	2	6	9	4	1	22
Number of children in grade	13	14	13	15	17	72

The fourth grade shows but a total of four errors having been made. These, it is to be seen, were made by three children since there is a total of nine children who made no noticeable errors. The figures would seem to indicate that either the children selected were especially good in oral reading or the reading material was too easy. The third grade shows a similar record since six children, or one-half of the number tested, made no errors. This means that the eight errors must be distributed among the remaining six children. Each of the second and the fourth grades show eleven errors with three and four children respectively who made no errors. The sixth grade has the record showing with sixteen errors and only one child who made no errors. There is a total of fifty errors for all the grades. Since twenty-three

children made no errors, it seems that the remaining thirty-seven children are responsible for these errors.

Of the fifty errors, 30, or 60 per cent, are substitution of words. With the exception of the sixth grade this is the most common error for each grade. For these children the errors would indicate that the substitution of words is the most common.

The basis for scoring the phrasing in the oral reading test is as follows:

Excellent -- Utilizes sentences or phrases, reading very smooth
Unbroken sentences or phrases most of the pauses were made only at logical places and punctuation marks.
Illustration: On the way to school (slight pause) Bob saw a red light. Not, "On the (pause) way to (pause) school Bob saw a red (pause) light."
Reading very smooth--No description of what reading would be when phrasing was done properly

Very Good -- One or two broken sentences or phrases, otherwise reading smooth
Broken sentences or phrases in a unit pause were made in the middle of phrases rather than at punctuation marks and other logical places. The second sentence above serves as an illustration.

Good -- [illegible] broken sentences or phrases, reading fairly smooth

Fair -- Sentences or phrases broken considerably, reading jerky
Jerky reading is descriptive of reading containing broken sentences and phrases

Poor -- The reading decidedly jerky and sentences or phrases very broken

Table 4

A Guide for Grades 4-6 Showing the Distribution of Phrasing in the Oral Reading Test

Excellent	3
Very good	13
Good	10
Fair	25
Poor	7
Total	60

Some of the children made very well their score is very low. The author believes that for a great many of the cases where poor reading was not as bad as it might be it was more applicable to the last story of the three stories read. Since the material was graded from easy to normal to difficult for each grade it is only natural to expect that more difficulty would be encountered with the last story.

Combining the twenty-five children who made a score of "Fair" and the seven who made a score of "Poor" there is a total of thirty-two children, better than one-half of the sixty children, whose scores in phrasing are below "Good." The following table shows to what extent these children, who made scores of "Fair" and "Poor" in phrasing, made the same scores in comprehension.

Table XI

The Number and Type of Comprehension Scores Made by the Children with Scores of "Poor" or "Fair" in Phrasing in the Individual Oral Reading Test

Phrasing	Poor	and	Comprehension	Poor	--- 1
"	"	"	"	Fair	--- 2
"	"	"	"	Good	--- 2
"	"	"	"	Very Good	--- 1
"	"	"	"	Excellent	--- 1
"	Fair	"	"	Poor	--- 0
"	"	"	"	Fair	--- 1
"	"	"	"	Good	--- 9
"	"	"	"	Very Good	--- 10
"	"	"	"	Excellent	--- 5

Of the seven "Poor" scores in phrasing made, only one child received a score of "Poor" in comprehension, two a score of "Fair" and two a score of "Good," while one received a score of "Very Good" and one a score of "Excellent." Of the twenty-five children receiving a score of "Fair" in phrasing, only one received a score below "Good" in comprehension. The figures for these children show that comprehension is not necessarily defective because of inferior phrasing.

Table XII

Lip-movements used by children in Grades 2-6 in the Natural and Controlled Silent Reading Tests as compared to Defective Phrasing Habits as Diagnosed in the Individual Oral Reading Test

	Grade 2	3	4	5	6	Total
Defective Phrasing (Poor or Fair)	11	5	0	1	2	19
Lip-movements in the Natural Silent Reading Test (Occasional and Continuous)	11	8	3	2	1	30
Lip-movements in the Controlled Silent Reading Test (Occasional and Continuous)	6	3	2	0	2	13

Every child in the second, third and sixth grades who received a score of 'Poor' or 'Fair' in phrasing in the Oral Reading Test made use of lip-movements in the Natural Silent Reading situation, while only one child in each of the fourth and fifth grades failed to use them. In the Controlled Silent Reading situation the fifth grade showed the greatest per cent of decrease, 100 per cent, since none of them used lip-movements. Each of the fourth and fifth grades showed a decrease of two children while the third grade showed a decrease of three and the second grade a decrease of five in the controlled situation over against the Natural Silent Reading situation. This shows that those who had defective phrasing were, almost without exception, those who made use of lip-movements in the Natural Silent Reading situation.

Table XIII

Lip-movements Made by Children in Grades 3-6 in the Natural and Controlled Silent Reading Tests as Compared to "Excellent" and "Very Good" Phrasing Made by the Same Children in the Individual Oral Reading Test

	Grade 3	4	5	6	Total
Phrasing (Excellent and Very Good)	1	8	1	3	4 17
Lip-movements in the Natural Silent Reading Test (Occasional and Continuous)	1	1	0	3	2 7
Lip-movements in the Controlled Silent Reading Test (Occasional and Continuous)	0	0	0	0	0 0

The figures in this table when compared with those in Table XII show that the children who made scores of "Excellent" and "Very Good" use less lip-movements than those with scores of "Fair" and "Poor." In the Natural Silent Reading test, seven, or 41.18 per cent, of the seventeen children used lip-movements, while none used them in the Controlled Silent Reading test.

The comprehension scores in the table below were obtained on the following basis. Seven questions were asked each child in each of the Oral Reading, Natural Silent Reading and Controlled Silent Reading tests. If he was able to answer unaided every question asked of him, he was given a score of "Excellent." If he failed on one question, he was given a score of "Very Good." Two wrong

responses gave him a score of 'Good,' three wrong responses a score of 'Fair,' and four wrong responses or more a score of 'Poor.'

Table XIV

A Distribution of the Types of Comprehension Scores Made by the Sixty Children of Grades 3-6 in Both the Oral and Silent Reading Situations in the Individual Test

	Excellent	Very Good	Good	Fair	Poor	Total No. of Children
Oral Reading	21	13	16	4	1	60
Silent Reading Natural	15	20	17	8	0	60
Silent Reading Controlled	13	12	20	7	1	60
Total	49	37	53	19	2	

From Table XIV it is to be noted that the Oral Reading test shows 35 per cent of the sixty children making a comprehension score of "Excellent," while in the Natural Silent Reading test only 25 per cent did so, with still less, 20.16 per cent, in the Controlled Silent Reading test. Of the sixty children 33.33 per cent made a score of "Very Good" in the Natural Silent Reading test, 21.67 per cent in the Controlled Silent Reading test, and 22 per cent in the Oral Reading test. Between the highest and the lowest per cents there is a difference of only 2.33 per cent. With the number of children who made a score

of "Good" the difference between the highest, 57.5 per cent in the Controlled situation and the lowest, 47.5 per cent in the Oral Reading, is 9.5 per cent. There are twice as many children in the Natural Silent Reading situation as compared to the Oral Reading test who made a score of "Fair" in comprehension. One less child made a score of "Fair" in the Controlled as compared to the Natural Silent Reading test. There are only two scores of "Poor," one each in the Oral and Controlled Silent Reading situations.

The above figures would seem to indicate that the types of reading material does not influence to any great extent the type of comprehension shown. If there is any difference it is to be made in favor of the Oral Reading as it alone the greatest per cent of "Excellent" scores, 10 per cent more than for the Natural and 14.5 per cent more, as compared to the Controlled situation. Comparing the comprehension scores in the Natural Silent Reading situation with those of the Controlled situation there are less "Excellent" and "Very Good" in the latter than the former. This may be due to the fact that the children were thinking more about the controlling of lip-movements, head movements, etc., than the contents of the reading material.

Table IV

A Table Showing the Comprehension Scores Made by Sixty Children in the Three Types of Reading Tests

Reading situation	Grade 2			Grade 3			Grade 4			Grade 5			Grade 6			Total for all grades
	O	N	C	O	N	C	O	N	C	O	N	C	O	N	C	
Excellent	1	1	0	3	0	5	3	1	1	7	3	5	3	2	2	43
Very Good	4	5	6	2	5	3	4	4	5	5	5	5	5	3	4	56
Good	3	2	3	3	1	1	3	5	5	1	2	3	3	7	3	55
Fair	3	4	2	0	3	0	0	2	0	1	3	2	0	0	1	19
Poor	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3

Note: O - Oral Reading
N - Natural Silent Reading Situation
C - Controlled Silent Reading Situation

Of the total of forty-nine "Excellent" scores the third and fifth grades contain more than half, since nineteen in grade 5 and seventeen in grade 3 are included, or a total of thirty-six. The second grade has the lowest with only two scores. The "Very Good" scores are more evenly distributed, extending from the lowest of 9 in the fifth grade to the highest, 17 in the second grade. The fourth and the sixth grades show the largest number of "Good" scores with sixteen and seventeen respectively. The lowest number is in grade 2 with only seven. The third grade scores about half of the "Fair" scores since it has nine out of the total of nineteen. The third grade has none and the sixth but one. All of the "Poor" scores are to be found in the second grade.

The above results indicate that for these sixty children, with an equal number from each grade, the second

grade station the lowest in comprehension, while the third grade fell on scores of "Fair" or "Poor" showing the highest in comprehension.

Table XVI

A Comparison of the Comprehension Scores with the Three Types of Reading Materials as Found in Grades 1-6 in the Individual Testing

Same score on all tests - - - - - - - - - - - - - - - -	37
Same score on both of the silent reading tests - -	11
Poorer score on the oral than silent reading tests	4
Poorer score on silent reading (controlled) than oral test - - - - - - - - - - - - - - - - -	16
Poorer score on silent reading (natural) than oral test - - - - - - - - - - - - - - - - - -	13

The above table shows that thirty-seven children made the same score on all the three types of tests while fourteen of the remaining twenty-three made the same score in both of the silent reading tests. While the results from the table show, that more made a poorer score on silent reading as compared to the oral reading than vice versa, yet it is not as serious as it may appear for in the majority of the cases it was revealed but one step. For instance if a score of "Very Good" was made on the oral reading test a score of "Good" was made on one or the other or both of the silent reading tests. The results on the other hand seem to indicate, however, that oral reading is not necessarily a hindrance to comprehension.

Table XVII

A Distribution of the Lip-movements, Head Movements, and Facial Reactions for Grades 2-6 as Found in Both the Natural and Controlled Silent Reading Tests

	Occasional lip-movements		Continuous lip-movements		Audible every word		Audible hard words		Head movements		Facial reactions	
	N	C	N	C	N	C	N	C	N	C	N	C
Grade 2	5	6	7	0	4	0	2	2	11	6	4	4
Grade 3	4	3	4	0	1	0	0	1	11	0	4	5
Grade 4	1	6	6	1	0	0	0	0	12	3	6	1
Grade 5	0	0	1	0	0	0	0	0	5	2	3	3
Grade 6	7	2	1	0	0	0	0	0	9	2	8	5

Note: N - Natural situation
C - Controlled situation

Quite a decrease is apparent in the number of lip-movements in the controlled situation as over against the natural situation. Only one child out of the sixty used continuous lip-movements under the controlled situation while twenty used them continuously under the natural reading situation. There is a total of sixteen occasional lip-movements in the Controlled situation over against twenty-five in the Natural Silent Reading situation. The decrease here is not so great which is to be explained on the basis that eleven who used continuous lip-movements in the Natural Silent Reading situation made use of them only occasionally in the Controlled situation. It is also to be noted from the table that none of the children in the fifth grade used lip-movements in the Controlled Silent Reading situation while only two in each of the third

and sixth grades used them. It is very evident from the results of these sixty children that lip-movements can be controlled and this without any great difficulty or the use of outward obstructions, such as holding the finger over the mouth, etc. The children in this study were simply asked before reading the last selection to endeavor to refrain from the use of the lips, head movements, or facial reactions.

In each grade there is a decrease in the number of head movements used with a complete elimination of them in the third grade. The side movement of the head seemed to be the most common one used. It is evident that children make use of both head and lip-movements unconsciously but when made conscious of them can control them.

Table XV shows that of the twenty-five children who used facial reaction of one kind or another in the Natural Silent Reading situation, sixteen, or 64 per cent, of them still persisted in using them in the Controlled Silent Reading situation. Of the facial reactions, smiling and frowning were used more than any others.

Table XVIII

The Number of Children Using Lip-movements, Facial Reactions and Head Movements in the Natural Silent Reading Test as Compared with Those Using Them in the Controlled Silent Reading Test

	Natural	Controlled
Lip-movements	45	17
Head movements	49	13
Facial reactions	24	16

All of the sixty children used lip-movements in the group testing work but of this number forty-five, or 75 per cent, made use of them in the Natural Individual Testing situation. In the Controlled situation only seventeen, or 39.78 per cent, of the forty-five used them, a decrease of 60.22 per cent. More than half of the fifteen children who did not use them in the Natural situation of the individual test used them but a few times in the group testing work.

Quite a decrease is also shown in the number of those who controlled the head movements. Of the sixty children, forty-nine, or 81.67 per cent, used them in the Natural Silent Reading situation. Only thirteen, or 26.53 per cent, of the forty-nine children used them in the Controlled situation which means a decrease of 73.47 per cent.

Of the sixty children twenty-four, or 40 per cent, used facial reactions in the Natural situation. Under the

Controlled situation sixteen, or 66.67 per cent, still persisted in using them. This means a decrease of only 33.33 per cent.

The above results would indicate that lip- movements and head movements are more easily controlled by this group of children, than are facial reactions.

Table XIA

A Table for Grades 2-6 Showing the Mean and Median Scores of the Time Required by the Sixty Children for Reading Each of the Different Types of Reading Material

	Mean	Median
Oral Reading	1 min. 30.2 sec.	1 min. 52.8 sec.
Silent Reading Natural	1 min. 31.2 sec.	1 min. 22.0 sec.
Silent Reading Controlled	1 min. 32.6 sec.	1 min. 30 sec.

The above table shows that the time required to read the selected materials orally and silently varies but little, being a difference of only 27.6 seconds more for the oral than for the silent which was done under natural circumstances. Under the Controlled Silent Reading situation a little more time was required than under the Natural Silent Reading situation. The difference is very slight, however, being only 1.4 seconds difference. This without doubt is due to the fact that under the controlled situation the child was trying hard to avoid lip-movements, head movements, and facial reactions.

Table III

A Comparison of the Difficulty Reading Material on the Part of the Children Who Used Lip-movements in Both the Natural or Uncontrolled Silent Reading Situations and in the Individual Reading

	Silent Reading Natural					Silent Reading Controlled				
Grade	2	3	4	5	6	2	3	4	5	6
No. of children using occasional lip-movements	5	1	4	6	7	8	2	6	0	2
						5[c]	1[c]	2[c]	4[c]	2[c]		2[c]
No. of children using occasional lip-movements, especially on paragraph 6	3	0	3	2	2	2	2	3	0	1
						2[c]	2[c]	1[c]	2[c]		1[c]

In the Controlled Silent Reading the "c" means that these children used lip-movements continuously in the Natural Reading situation and only occasionally in the Controlled situation. The "c" means that these children used occasional lip-movements in both the natural and Controlled Reading situations.

The two children in Grade 2 who used occasional lip-movements in the Controlled situation and especially so on the last paragraph, used them continuously in the natural situation. This means that none of the children who used occasional lip-movements and especially so on the last paragraph in the Natural situation used them in the Controlled situation. In Grade 3 the two children who used

occasional lip-movements especially on the last paragraph used lip-movements continuously in the Controlled situation. Two children in Grade I who used lip-movements continuously in the Natural situation used only occasional lip-movements in the Controlled situation and then primarily on the last paragraph. Only two children in Grade I used occasional lip-movements primarily on the last paragraph in the Natural test while none made use of them in the Controlled test. Of the two children in Grade 6 who used occasional lip-movements especially on the last paragraph in the Natural test, only one resorted to such in the Controlled test.

These findings indicate that for the sixty children who were tested individually the difficulty of the material is not a serious factor in the number of lip-movements used, for only ten of the sixty children, or 16.67 per cent, used lip-movements in the Natural situation, primarily on the last paragraph which was the most difficult paragraph of the three paragraphs read. In the Controlled test only eight of the sixty children tested, or 13.33 per cent, used occasional lip-movements especially on difficult material.

Chapter VII

Summary and Conclusions

Summary and Conclusions

From an analysis of the foregoing data we are now ready to summarize and draw some conclusions with reference to the study which has been made on the two hundred one children from the "B" divisions of Grades 2-6, regarding lip-movements, head movements and facial reactions. These conclusions are based upon the results of observations made on the Gates Primary and Silent Reading tests for all the grades, and the natural schoolroom situations, as well as individual testing of sixty of the children chosen from each of the grades mentioned.

The results of the Group Observations show:

1. That these children tend, in general, to use more lip-movements when placed under a test situation than when engaged in the actual schoolroom activities,

2. That of the natural schoolroom situations, poetry and arithmetic rank highest on the number of lip-movements used, while penmanship and spelling show the least number of lip-movements.

3. That in general the children who used lip-movements used more continuous than occasional lip-movements.

4. That there is a gradual decrease in the use of lip-movements from grade to grade, a very small per-

centage making use of them by the time they reach the sixth grade,

8. That of those who make use of lip-movements in reading, a few more with high than with low IQ used them in the Gates test situation, while more whose IQ's were low used them in the schoolroom situations,

9. That the same number of children in grades 2-6 used lip-movements in the Upper and Lower Quartiles which were based on the Gates reading test scores, while in the schoolroom situations more children in the Lower than in the Upper quartile used lip-movements,

7. That only a very small proportion of the children, when reading, pronounce the words audibly and then primarily in a test situation or with difficult passages,

8. That those who do use lip-movements are not necessarily deficient in mental ability,

9. That of the head movements which were used, the sideward one is the most common.

10. That there is a decrease from grade to grade in the per cent of head movements used, as well as less head movement in the test situation than in the schoolroom situations, and

11. That although more facial reactions are found in the natural schoolroom situations than in the

Gates test situation, or one subject whom accordingly used their mother.

The results of the Individual Testing of the sixty children show:

1. That lip-movements can be controlled, for of the forty-five children who used either occasional or continuous lip-movements in the Natural Silent Reading situation, 62.22 per cent were able to control them entirely in the Controlled Silent Reading situation,

2. That head movements can also be controlled, for of the forty-eight children who used them in the Natural Silent Reading situation, 75 per cent controlled them in the Controlled Silent Reading situation,

3. That facial reactions still persist under the Controlled Situation since sixteen of the twenty-five, or 64 per cent, still used them in the controlled situation,

4. That comprehension is not necessarily defective because of inferior phrasing, but is affected by any attempt to control lip-movements,

5. That in oral reading the substitution of words is the most common error made by all grades except the Sixth, where one more appears for mispronunciation of words than for the substitution of words. The mispronunciation of words ranks second among the errors made,

6. That those who had defective phrasing in oral

reading-rate, almost without exception, there is a loss of lip-movements in the silent reading test,

7. That most lip-movements were made by children who had "Excellent" and "Very Good" scores (which were followed by those with "Poor" and "Fair" scores in phrasing, in the Oral Reading test,

8. That of the rank scores for the sixty children for each type of reading, 47.6 seconds more time was required to read the Oral Reading selection than the Natural Silent Reading selection, with only 32.8 seconds more time than for the Controlled Silent Reading selection, and

9. That the difficulty of the reading material has little effect upon the number of children who used lip-movements since only 10.7% per cent of the sixty children used them primarily in difficult material in the Natural Silent Reading test and 17.7 per cent in the Controlled Silent Reading test.

Tentative Conclusions and Recommendations

With the foregoing data summarized, the writer feels it is fairly safe to draw some conclusions which, it is believed, may be equally applicable elsewhere under other conditions. It is of course understood that these are only suggestive. There is no disposition on the part of the writer to make them final.

Since the study has shown that the children

irrespective of reading ability and intelligence used lip-movements, for with it he had to feel, along with Pollock and Pronko, that lip-movements and intelligence do respond to lip-movements. What is just what to do to fully test [illegible] of intelligence, including the 'A,' 'B,' and 'C' divisions, should be used. This was not done in this or the above mentioned study.

Again the writer is disposed to agree with Brecht that overemphasis on the elimination of lip-movements may interfere with comprehension. This study does not bear out this contention, but it may be true with very hard to control ones. The ones on a treadle throughout the reading test and although the lip-movements were quite well controlled the comprehension suffered. This is in opposition to what Gessell found, to wit that both comprehension and speed are affected by these factors lip-movements. The age of the child may make some difference. Seventh and eighth grade children were used by her in her experiments while the children, while younger children were used for this study.

Since 60.33 per cent of the forty-five children who used lip-movements in the individual reading situation were able to control them without the use of outward demonstrations such as placing the finger over the mouth, it is

[illegible] that such destructions were [illegible]. A gentle reminder now and then will, it is believed, do much [illegible] of life-saving.

Appendix

Following are the tests used in Grades 3-8 of the "B" division for testing purposes and to which the writer referred for purposes of this study.

Gates Primary Reading Tests

Grades 1 and 2

Type I	Word Recognition	Form 2
Type II	Word, Phrase, and Sentence Reading	Form 2
Type III	Reading of Directions	Form 2

Gates Silent Reading Tests

Grades 3-8

Type A	Reading to Appreciate the General Signification	Form 1
Type B	Reading to Predict the Outcome of Given Events	Form 1
Type C	Reading to Understand Precise Directions	Form 1
Type D	Reading to Note Details	Form 1

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A sample of the record which was kept for each [illegible] and subject of the observations made.

Kendall School - Delmont, Penn.

December 12, 1932

Grade I B 2

Silent reading test on factual material -- questions from written on the board to which the children were to find the answers in the material found in the reader.

Number of children	30
" " " using accessional lip-movements	0
" " " " continuous " "	0
" " audible pronunciation of hard words	1
" " audible pronunciation of every word	0
" " head movements	0
" " facial reactions	7

Children Using Accessional Lip-movements

L.L.
M.F.
A.S.
T.L.
C.R.
I.S.
E.F.
V.O'D.

Facial Reactions

J.O'D.	frowning
A.P.	"
M.G.	"
A.F.	pinched lips and frowning
E.M.	pinched lips and frowning
D.F.	frowning
E.S.	frowning and puckered lips

Children Using Continuous Lip-movements

J.O'D.
E.K.
A.P.
V.G.
A.S.
M.K.
V.L.
I.P.
B.M.

Pronunciation of Hard Words

D.F.

Head Movements

A.F. Side movement
M.I. " "
D.M. " and forward movement

Note: Initials have been used in place of the full names of the children which appear on the original score cards.

A detailed sample of the technique used for the individual testing of the sixty children of the "B" division of Grades 2-6

Wendell School - Belmont, Mass.

March 9, 1933

Grade 2 B

Name of the child -- W.McC (Initials appear instead of the full name)

Oral Reading

Time -- 1 min. 10 sec.
Phrasing -- A bit jerky, especially on the last paragraph
Errors -- Substitution of words
"then" for "them," and "ran" for "rag"
Comprehension -- Very good

Silent Reading - Natural

Time -- 1 min. 21 sec.
Habits -- Occasional lip-movements, especially the last paragraph
Side movements of head
Comprehension -- Very good

Silent Reading - Controlled

Time -- 2 min. 3 sec.
Habits -- No lip-movements or head movements
Comprehension -- Very good

Grade 2

IQ	Children using lip-movements: Gates	School work
150---154 - 1	1	1
145---149 - 0	0	0
140---144 - 0	0	0
135---139 - 0	0	0
130---134 - 3	3	2
125---129 - 2	2	2
120---124 - 7	7	6
115---119 - 4	3	3
110---114 - 9	6	7
105---109 - 0	0	0
100---104 - 1	1	1
95--- 99 - 1	0	1
90--- 94 - 2	0	2
85--- 89 - 1	0	1
80--- 84 - 2	1	2

	Gates	School Work
Upper Quartile	9	8
Lower Quartile	4	9

Grade 3

IQ	Children using lip-movements: Gates	School work
130---142 - 1	0	1
135---138 - 1	1	0
131---134 - 4	3	1
127---130 - 2	1	0
123---126 - 4	4	3
119---122 - 2	2	1
115---118 - 7	5	5
111---114 - 3	2	1
107---110 - 4	1	2
103---106 - 2	2	2
99---102 - 3	2	3
95--- 98 - 3	1	2

	Gates	School Work
Upper Quartile	6	2
Lower Quartile	6	7

Grade 4

IQ	Children using lip-movements: Gates	School work
135 - 139 - 1	0	1
130 - 134 - 1	0	0
125 - 129 - 0	0	0
120 - 124 - 2	1	2
115 - 119 - 1	0	0
110 - 114 - 5	4	4
105 - 109 - 4	1	2
100 - 104 - 5	2	3
95 - 99 - 4	1	3
90 - 94 - 5	2	4
85 - 89 - 7	4	7
80 - 84 - 1	0	1
75 - 79 - 1	1	1

	Gates	School Work
Upper Quartile	5	7
Lower Quartile	6	10

Grade 5

IQ	Children using lip-movements: Gates	School work
132 - 136 - 1	1	1
128 - 131 - 0	0	0
124 - 127 - 0	0	0
120 - 123 - 2	0	1
116 - 119 - 1	0	0
112 - 115 - 5	2	1
108 - 111 - 6	1	4
104 - 107 - 6	2	4
100 - 103 - 7	5	5
96 - 99 - 3	1	3
92 - 95 - 4	0	3
88 - 91 - 2	1	1
84 - 87 - 2	0	0
80 - 83 - 1	0	1

	Gates	School Work
Upper Quartile	3	5
Lower Quartile	1	6

Grade 6

	Children using lip-movements	School work
130 - 134 - 1	1	1
125 - 129 - 1	1	1
120 - 124 - 0	0	0
115 - 119 - 2	0	0
110 - 114 - 8	3	4
105 - 109 - 4	1	2
100 - 104 -10	4	3
95 - 99 - 7	2	0
90 - 94 - 2	2	2
85 - 89 - 1	2	2
80 - 84 - 0	0	0
75 - 79 - 2	1	1
70 - 74 - 1	0	1

	Children using lip-movements	School work
Upper quartile	5	6
Lower quartile	2	3

Oral Reading - Voluntary Recall

1. Bob

Bob was going to school.
He saw a red light.
He said, "I will stop."
Then the green light came.
"Now I can go," said Bob.

2. The Cat and the Dog

A boy had a big gray cat. He was going to give her some milk. She did not come when he called. He saw her up in a tree looking down at a big dog. The boy sent the dog away. Then the cat jumped down from the tree and came for her milk.

3. Dick

Dick jumped out of bed and ran down stairs. It was his birthday. He found a big basket on his chair at the table. Something was moving in the basket. Dick took off the cover. Out jumped a little brown dog. The dog licked Dick and ran to the door. He was glad to get out.

1. The Accident

A boy was hurt on our street yesterday. He had been playing ball and was riding his bicycle away from the ball field when a car came down the road. He did not see the car coming because he was looking back at the boys who were still playing ball. The car was going slowly. It hit the boy, but did not run over him. The car was hurt and his bicycle was bent.

2. Trains

The first trains were pulled by horses. Later, engines were used to pull trains. The first engines could not go very fast and often broke down. Once there was a race between a train pulled by an engine and a train pulled by a horse. At first the horse was used because the engine had to start slowly. Then the engine passed the horse, but something in the engine broke and the horse won the race.

3. Uses of Kites

Large kites have been used for a great many things. In war they may be used to carry signal lanterns and to carry automatic cameras over the enemy territory.

One general used kites to pull ropes across a swift river so that he could start to build a swinging bridge. Some people in China make "singing kites" which are supposed to frighten away evil spirits. The weather bureau has used kites to study temperature and the speed of the wind at great heights. A string of kites once went up over four miles in the air. Some kites are big enough to lift a man.

2. General St. Clair

Failure to plan for suitable defense under irregular conditions of warfare accounts for defeat in the first war waged by the United States. An army of one thousand men under General Arthur St. Clair marched northward from Cincinnati to punish Indians who had broken treaty provisions. They neglected to guard against unexpected assault and found themselves defenseless when hostile Indians suddenly attacked them in the forest. Firearms gave little protection against an enemy in a bush. After a futile attempt at defense, St. Clair ordered his men to retreat. Only fifty escaped uninjured. President Wash-

ington felt very bitterly about St. Clair's carelessness in the country's first military campaign.

Oral Reading

1. Fluff

Fluff is a little yellow kitten.
She drinks milk.
She sleeps on a chair.
She does not like to get wet.

2. The Dog

A little black dog ran away from home. He played with two big dogs. They ran away from him. It began to rain. He sat under a tree. He wanted to go home, but he did not know the way. He saw a boy he knew. The boy took him home.

3. Camping

Six boys put a tent by the side of the river. They took things to eat with them. When the sun went down, they went into the tent to sleep. In the night, a cow came and began to eat grass around the tent. The boys were afraid. They thought it was a bear.

4. The Boat

Henry goes to a large lake in summer. Last summer, a motor boat sank near his house. The boat had ten men on it. The man who was running the boat brought it very close to the shore when the water was low. He hit a big rock under water. It made a hole in the bottom of the boat. The water came in very fast. All the men swam to shore.

5. Robert Fulton

In 1807, Robert Fulton took the first long trip in a steamboat. He went one hundred and fifty miles up the Hudson River.

The boat went five miles an hour. This was faster than any steamboat had ever gone before. Crowds gathered on both sides of the river to see this new kind of boat go by. The fishermen did not like the boat. They were afraid that its noise and splashing would drive away all the fish.

6. Diamonds

The richest diamond field in the world is in South Africa. Deep pits yield a hard substance called "blue ground" which contains

the diamonds. The blue ground is spread over the drying fields for a year. The weather gradually crumbles it. Then it is taken up to the mill through washing machines which sort out the stones and the diamonds. The value of the diamonds is determined by color, size and purity. Blue, yellow, orange, brown and green diamonds have been discovered. The most valuable ones are pure white. The largest diamond ever found weighed almost two pounds.

9.

One of the most difficult political and economic problems of our federal government is to prevent the development, throughout the country, of certain commercial interests at the expense of others. One very persistent thing has been against the development of large corporations. Lobitt in his study of the history of this struggle states that it has three distinct objectives. First, to find some satisfactory means to control and regulate the activities of large business corporations. Second, to resist the tendency of corporations to exploit natural

[illegible] for their own benefit. Third, the control tariffs which [illegible] and [illegible] policies.

SIXTY READING
WORD DATA INVENTORY

1. Jack

Jack made a house.
He made it out of a box.
He put a flag on top.
The flag is red, white, and blue.

2. Pop

The policeman has a big brown horse named Pop. The children like to pet him. They give him apples and sugar to eat. Pop can do two tricks. He can shake hands. When the policeman says, "Count 'em," Pop puts up his hand and taps with his foot.

3. The Shoes

One morning Jack woke up late. He had to dress in a hurry. He put one of his blue shoes on, but he could not find the other. He could find only an old brown shoe. He put it on and ran to school. He got there just in the nick of time.

Salem Stories
Old Time Tumpikes

1. The Old House

[illegible] started to build a house. He wanted to finish it before winter came. He had come over big the cellar for him. Then he built the floor and the cellar steps himself. Before he could do anything more, he had to move away to another town. He left the house just as it was. The boys next door that they might use the cellar as a play house.

2. Peter Cooper

Peter Cooper built one of the first railroad engines in the United States. It was used to pull cars from a city to a town thirteen miles away. No one thought that the engine could do this. In August in the year 1830, it was headed by a car load of people. It went at a speed of eighteen miles an hour and made the trip in forty-eight minutes. People were

surprised that anyone could breathe while going so fast.

7. Rubber

Rubber came into general use about two hundred years ago. Columbus brought it back from his second voyage to America. It was named "rubber" because it was used to rub out pencil marks. Rubber comes mainly from Africa and Brazil. It was manufactured from the milky juice of the rubber tree. Rapid handling of the juice is necessary. It is collected early in the morning when the flow is greatest. At the factory, acid is added at once to make the rubber rise to the top. It is then treated in many different ways. Attempts to produce rubber in the United States have not been successful.

8. Industries

Between 1865 and 1900, the Northern part of the United States enjoyed

great prosperity. Many new industries developed, among them the making of thread and ready made clothes. The invention of machinery revolutionized methods of manufacture. For example, introduction of the Blay sewing machine permitted the manufacture of shoes in big factories. Radical changes in steel-making allowed enormous expansion of the iron and steel industries. The Bessemer process of smelting was introduced into the country in 1861. As a result, more machinery could be built, and factories became more productive.

Grade III B

Group Observations

Report on the Gates Silent Reading Tests given in Nov. 1931 - Oct. 1932 with the mental ages based on the Kuhlmann-Anderson Tests

Name	CA	MA	IQ	Oct. 1931	May 1932	A	B	C	D	Av.
J.B.	7-8	8-4	109	7.58	9.10	10.8	10.4	11.4	10.0	10.7
W.B.	8-4	7-6	114	9.20	9.20	9.2	9.7	8.3	8.7	9.0
S.C.	8-3	9-11	120	7.53	9.30	9.0	9.4	9.2	9.7	9.3
R.C.	8-7	8-11	104	7.43	8.68	8.5	9.2	8.0	8.3	8.5
D.C.	6-9	9-2	136	7.75	9.25	9.7	9.7	8.9	9.9	9.6
A.C.	7-11	10-5	132	9.00	9.30	15.5	12.6	12.0	10.2	12.6
B.C.	8-3	9-6	115	7.50	8.45					
H.C.	7-8	9-9	128	7.60	9.30	12.6	13.1	12.0		12.8
C.C.	7-2	9-4	131	7.13	9.00	10.0	10.0	10.8	10.3	10.3
P.D.	8-0	9-3	115	8.45	9.10	10.4	10.0	8.9	11.3	10.2
B.D.	8-4	8-6	102	7.40	8.55	8.3	8.0	8.5	8.5	8.3
R.G.	7-10	10-3	131	7.80	9.05	8.6	8.8	8.6	8.7	8.7
C.G.	7-11	9-2	116	7.80	9.00	9.4	9.4	8.6	9.4	9.2
R.G.	7-9	9-7	124	8.55	9.10	9.7	10.0	9.5	9.9	9.8
W.G.	9-3	9-3	100	8.40	8.90	9.0	9.0	9.5	8.8	9.1
J.G.	7-11	9-0	114	7.10	8.65	9.0	8.8	8.3	8.9	8.8
H.H.	8-0	9-3	116	7.45	7.90			8.3	8.5	8.5
M.K.	8-2	10-2	125	8.45	9.20	10.0	11.4	10.8	9.8	10.5
G.K.						9.2	10.4	8.9	9.8	9.6
R.L.	7-9	10-2	131	8.30	8.25	9.0	8.8	9.2	9.2	9.1
J.L.	7-10	8-6	108	7.98	8.55	9.4	9.2	8.0	9.4	9.0
J.L.	8-3	9-5	114	8.80	9.30	9.7	9.4	10.0	10.3	9.9
G.L.	8-8	11-2	129	7.88	9.05	9.0	9.4	9.8	9.6	9.5
V.M.	8-0	11-2	140	7.98	9.30					
J.M.	8-8	8-5	97	7.35	8.80	8.5	8.3	8.9	8.3	8.5
D.N.	8-5	8-8	103	7.65	8.90	8.6	8.8	10.0	10.0	9.4
R.N.	9-1	8-9	96	7.40	8.45	8.6	8.6	8.6	8.4	8.6
F.R.						9.7	9.2	10.8	9.3	9.8
M.R.	8-9	9-7	110	7.78	9.10	8.6	8.8	9.5	9.0	9.0
D.R.	8-3	10-5	126	7.63	8.45	8.6	8.5	8.5	8.0	8.4
J.S.	7-7	7-7	100	7.10	8.45	8.6	8.8	9.5	9.4	9.1
J.S.	8-6	9-4	110	6.62	8.25	8.6	8.5	8.0	8.5	8.4
J.S.	8-5	8-0	195	7.65	8.80	9.4	8.0	8.5	8.5	8.6
A.S.						8.8	9.0	8.5	8.5	8.7
J.T.	7-8	9-5	123	7.35	8.20	9.0	8.8	8.9	9.2	9.0
C.T.	8-0	9-5	118	8.25	9.20	10.4	10.4	12.6	11.7	11.3
J.W.	8-6	9-9	115	7.65	8.80	8.6	8.3	9.3	8.4	8.4
H.W.	8-3	10-0	121			9.2	8.8	9.5	9.7	9.3
W.M.	8-7	10-2	118	8.45	8.65			9.8	9.0	9.4

Name	Occasional C Gates	Occasional C Tests	Occasional D Penmanship	Occasional D Spelling	Occasional D Arithmetic	Occasional D Story-Read.	Continuous C Gates	Continuous C Tests	Continuous D Penmanship	Continuous D Spelling	Continuous D Arithmetic	Continuous D Story-Read.	Audible-Hard Words C Gates	Audible-Hard Words C Tests	Audible-Hard Words D Penmanship	Audible-Hard Words D Spelling	Audible-Hard Words D Arithmetic	Audible-Hard Words D Story-Read.	Audible-Easy Words C Gates	Audible-Easy Words C Tests	Audible-Easy Words D Penmanship	Audible-Easy Words D Spelling	Audible-Easy Words D Arithmetic	Audible-Easy Words D Story-Read.	Hear Movements C Gates	Hear Movements C Tests	Hear Movements D Penmanship	Hear Movements D Spelling	Hear Movements D Arithmetic	Hear Movements D Story-Read.	Facial Reactions C Gates	Facial Reactions C Tests	Facial Reactions D Penmanship	Facial Reactions D Spelling	Facial Reactions D Arithmetic	Facial Reactions D Story-Read.	
J.B.			✓		✓																												✓		✓		
W.B.	✓	✓																																			
S.C.	✓		✓					✓		✓	✓																						✓				
R.C.	✓		✓		✓	✓	✓												✓	✓					✓	✓	✓	✓	✓	✓			✓	✓	✓		*
D.C.	✓		✓		✓					✓																											
A.C.		✓	✓								✓																						✓				
B.C.																																					
H.C.																																					
C.C.																																					
P.D.	✓				✓		✓			✓																											
B.D.			✓		✓		✓			✓	✓																						✓	✓	✓	✓	*
R.G.							✓																														
C.G.							✓	✓																													
R.G.			✓		✓		✓																														
W.G.																																					
J.G.	✓																								✓						✓						
H.H.			✓		✓																						✓								✓		
M.K.	✓							✓			✓																										
G.K.							✓																														
R.L.							✓	✓																	✓	✓											
J.L.		✓	✓		✓					✓																	✓		✓		✓		✓				*
J.L.			✓		✓	✓																					✓		✓				✓		✓	✓	*
G.L.							✓	✓																				✓									*
V.M.					✓																																
J.M.				✓				✓			✓								✓	✓							✓	✓	✓					✓	✓	✓	*
D.N.		✓		✓			✓																											✓			*
R.N.																																					
F.R.	✓						✓																														
M.R.																																					
D.R.			✓					✓		✓	✓																							✓			*
J.S.		✓					✓									✓	✓								✓						✓		✓				*
J.S.																																					
J.S.					✓			✓																				✓									
A.S.			✓				✓	✓		✓	✓																✓	✓	✓				✓		✓		*
J.T.	✓																																				
C.T.		✓	✓		✓					✓	✓																✓						✓	✓			*
J.W.							✓	✓		✓																		✓									
H.W.	✓						✓																														
W.M.	✓							✓		✓																		✓				✓	✓		✓			*

*- Children chosen for Individual Testing

Grade III B

Report on the Gates Silent Reading Tests given in Nov. 1932 with the mental ages based on the Kuhlmann-Anderson Tests 1931-32

Name	CA	MA	IQ	Mar.	May	1932 II	1932 III	1932 Av.
T.A.	6-10	7-10	114	6.58	7.85	7-7.5	7-10	7-9
P.B.	6-10	8-1	118	6.87	8.50	8-6	8-2.5	8-5
P.C.	7-4	8-6	110	6.32	7.60	8-6	8-2.5	8-5
A.C.	8-1	7-5	92	6.92	8.37	7-10	8-2.5	8-1
E.C.	6-10	8-1	118	7.05	7.95	7-9	8-7	8-2
M.F.	7-11	9-5	119	7.28	7.65	7-7	8-8.2	8-2
R.G.	7-1	8-6	120	6.88	7.40	7-10	8-2.5	8-1
B.G.	6-8	7-4	110	6.75	7.15	7-11	8-7	8-3
J.H.	7-3	8-0	110	6.63	7.00	7-4	7-6	7-5
C.H.	5-9	8-10	153	6.00	7.90	7-1	8-8.2	7-11
R.H.	7-8	9-6	124	7.18	7.85	7-11	8-0	8-0
R.J.	7-5	9-1	123	6.45	7.30	7-7	7-7	7-7
J.K.	7-0	6-2	88		6.00	6-9.5	7-1	7-0
R.K.	7-4	8-2	111	6.95	8.05	7-8	7-8	7-8
A.L.	6-9	7-5	110	6.73	7.40	7-0	7-5	7-3
W.M.	7-3	9-1	125	6.80	7.65	7-8	8-9.5	8-3
A.M.	7-5	7-5	100	6.60	7.50	7-8	7-8	7-8
H.M.	7-7	8-11	118	7.05	7.10	7-7	8-2.5	7-11
J.M.	6-10	8-3	121	7.60	7.85	7-9	8-5	8-1
R.M.	7-5	9-10	133	6.86	7.20	7-5.5	7-1.5	7-4
J.M.	7-0	9-1	130	7.40	7.10	7-7.5	7-6	7-7
W.N.	7-6	8-3	110	6.65	7.00	7-4	7-8	7-6
J.N.	7-2	8-0	112	6.60	7.10	6-8.8	7-3	7-0
E.O.	6-8	8-8	130	6.88	7.30	7-8	7-6	7-7
W.P.	7-8	4-5	123	7.00	7.70	8-0	7-8	7-10
E.P.	7-5	8-2	110	6.40	7.50	7-4	7-7	7-6
J.P.	8-3	9-4	113	7.28	7.80	7-6.5	7-2	7-5
J.P.	7-3	9-3	128	6.00	7.10	7-9	8-5	8-1
P.Q.	8-4	8-0	96	6.40	7.10	7-10	7-4	7-7
I.R.	8-8	7-9	90	6 oct. 90	7.55	7-3	8-7	7-11
A.S.	6-9	7-11	117	6.75	7.15	6-9	7-1.5	7-0
W.S.	6-9	8-1	120	6.80	7.50	6-8.5	7-3	7-0
P.S.	6-8	8-1	121	7.10	6.90	7-6	7-10	7-8
D.W.	8-6	6-10	80	7.23	7.80	7-11	8-8.2	8-4
J.A.	8-1	7-5	81			6-10	7-1.5	7-0

Group Observations

Name	Occasional: Gates Test	Occasional: Spelling-Arithmetic	Occasional: Story-Read.-Factual-Read.	Continuous: Gates Tests	Continuous: Spelling-Arithmetic	Continuous: Story-Read.-Factual-Read.	Audible-Hand Work: Gates Tests	Audible-Hand Work: Spelling-Arithmetic	Audible-Hand Work: Story-Read.-Factual-Read.	Audible-Every Hand: Gates Tests	Audible-Every Hand: Spelling-Arithmetic	Audible-Every Hand: Story-Read.-Factual-Read.	Head Movements: Gates Tests	Head Movements: Spelling-Arithmetic	Head Movements: Story-Read.-Factual-Read.	Facial Reactions: Gates Tests	Facial Reactions: Spelling-Arithmetic	Facial Reactions: Story-Read.-Factual-Read.	
T.A.				✓	✓														
P.B.				✓															
P.C.				✓	✓	✓										✓			*
A.C.						✓							✓					✓	
E.C.					✓												✓		*
M.F.																			
R.G.	✓		✓		✓	✓								✓	✓	✓			*
B.G.			✓	✓	✓	✓							✓		✓				*
J.H.			✓	✓	✓	✓								✓		✓			
C.H.				✓	✓	✓	✓									✓			*
R.H.				✓	✓	✓								✓	✓		✓	✓	*
R.J.				✓	✓														
J.K.					✓	✓									✓		✓		*
R.K.			✓			✓													
A.L.				✓	✓	✓				✓	✓	✓	✓	✓	✓	✓	✓	✓	*
W.M.	✓		✓		✓														
A.M.	✓		✓	✓		✓								✓	✓	✓	✓	✓	
H.M.		✓	✓	✓		✓								✓		✓		✓	*
J.M.	✓		✓		✓												✓		
R.M.				✓															
J.M.				✓	✓	✓				✓			✓						*
W.N.																			
J.N.				✓		✓							✓						
E.O.	✓				✓												✓		
W.P.				✓															
E.P.				✓															
J.P.					✓	✓							✓						
J.P.	✓				✓					✓									
P.Q.					✓												✓		
I.R.						✓							✓						
A.S.	✓		✓	✓						✓									
W.S.				✓	✓	✓								✓	✓	✓	✓	✓	*
P.S.				✓	✓	✓							✓				✓	✓	*
D.W.				✓		✓							✓						*
J.A.					✓	✓												✓	

*- Children chosen for Individual Testing

Grade IV B

Report on the Gates Silent Reading Tests given in Nov. 1932 with the mental ages based on the Kuhlmann-Anderson Tests.

Group Observations

Names	C.A.	M.A.	I.Q.	1931-32 Oct.	1931-32 May	1932 A	1932 B	1932 C	1932 D	Av.
F.B.	8-0	7-8	96	8.7	11.1	9.2	10.4	12.0	10.1	10.4
C.B.	11-2	10-0	89	8.5	9.10	9.0	8.5	8.5	9.4	8.9
E.B.	9-5	11-3	119	9.2	9.4	9.7	9.2	10.4	9.3	9.7
A.B.	8-3	11-2	135	8.5	8.8	8.6	8.6			8.6
I.C.	9-8	8-7	89	8.6	9.9	9.2	8.6			8.9
R.C.	8-6	11-4	133	8.4	10.2	10.0	10.0	10.8	9.7	10.1
H.C.	9-10	10-3	104	8.8	10.2	9.4	9.4	10.8	9.5	9.8
D.D.	9-6	8-6	89	9.8	10.3	11.4	10.8	11.4	10.7	11.1
A.F.	9-5	8-1	86	8.6	9.4	9.7	9.4	9.5	9.2	9.5
I.F.	9-0	8-6	94	8.9	9.7	9.4	10.0	10.4	10.1	10.0
E.F.						9.7	9.2	9.5	9.8	9.6
E.G.	9-2	7-10	85	8.9	9.8	9.7	9.7	9.8	9.5	9.7
M.H.	9-2	10-6	114	8.9	10.3	10.4	11.4	9.2	10.0	10.3
E.H.	9-3	10-6	113	8.8	9.7	9.2	8.8	11.4	9.6	9.8
F.J.	10-8	10-6	98	8.8	11.4	12.0	10.8	11.4	9.9	11.0
W.J.	9-1	9-10	108	8.4	9.4	8.6	9.7	8.6	9.2	9.1
M.K.	8-6	10-6	123		9.4	10.0	9.4	10.8	9.8	10.0
C.L.	9-3	9-7	103	8.6	9.5	9.7	10.8	10.0	9.6	10.0
V.L.						8.8	9.0	10.4	9.2	9.4
E.M.	9-0					10.0	10.0	9.5	9.8	9.8
R.M.	9-1	9-6	104	8.6	9.9	9.4	9.4	8.9	9.2	9.2
N.M.	9-1	11-1	122	8.4	9.0	9.0	8.6	9.5	9.1	9.1
B.N.	8-8	8-10	102	9.1	9.8	9.7	9.7	8.5	8.7	9.2
J.N.	9-8	10-2	105	8.5	10.1	10.0	9.7	10.4	10.8	10.2
J.O.	9-8	8-10	92	8.8	9.2	9.7	9.0	8.6	9.1	9.1
J.O.	9-8	7-10	81	8.6	9.7	9.7	9.7	8.6	8.9	9.2
M.O.	9-5	10-4	110	8.5	9.0	9.2	8.6	11.4	9.4	9.7
H.P.	9-6	9-7	101	8.6	10.3	12.6	10.8	10.8	9.9	11.0
A.P.	10-2	8-10	87	9.6	12.0	13.7	10.8	13.7	12.2	12.6
M.P.	9-5	8-8	92	8.7	8.9	9.2	8.6	8.9	9.6	9.1
C.P.						9.7	10.8	14.2	10.7	11.4
D.P.	8-9	9-7	109	9.1	10.1					
H.P.	10-4	9-9	94	8.7	9.5	9.2	8.6	10.8	9.4	9.5
J.S.	10-6	8-4	79	8.4	8.8	8.8	8.5	8.9	8.8	8.8
J.S.	10-7	9-5	89	8.3	9.2	9.4	9.0	10.8	9.5	9.7
R.S.	10-4	11-3	109	9.3	10.3	10.8	12.6	16.0	10.0	12.4
L.S.	8-9	10-0	114	8.7	8.9	9.2	9.2	8.5	9.2	9.0
W.S.	10-2	10-0	98	8.7	9.0	9.4	9.4	8.9	9.0	9.2
A.S.	9-5	8-9	93	9.1	9.7	10.0	10.0	14.2	9.9	11.0
A.T.	8-10	10-0	113	8.8		12.0	12.6	12.0	12.7	12.3
V.P.	9+10	9-8	98	8.4	9.0	9.2	8.6	9.5	9.3	9.2

Names	Occasional: Gates C	Occasional: Tests D	Penmanship	Spelling	Arithmetic	Factual-Read.	Poetry-Read.	Continuous: Gates C	Continuous: Tests D	Penmanship	Spelling	Arithmetic	Factual-Read.	Poetry-Read.	Audible-Hard Words: Gates C	Audible-Hard Words: Tests D	Penmanship	Spelling	Arithmetic	Factual-Read.	Poetry-Read.	Audible-Every Word: Gates C	Audible-Every Word: Tests D	Penmanship	Spelling	Arithmetic	Factual-Read.	Poetry-Read.	Head Movements: Gates C	Head Movements: Tests D	Penmanship	Spelling	Arithmetic	Factual-Read.	Poetry-Read.	Facial Reactions: Gates C	Facial Reactions: Tests D	Penmanship	Spelling	Arithmetic	Factual-Read.	Poetry-Read.	
F.B.			✓			✓		✓						✓															✓													
C.B.							✓	✓	✓																																	*
E.B.																																											
A.B.							✓	✓																																			
I.C.											✓			✓															✓													*
R.C.																																											
H.C.																																											
D.D.							✓	✓																																			
A.F.			✓				✓																								✓					✓						*
I.F.																																											
E.F.	✓	✓	✓								✓	✓																	✓													
E.G.								✓			✓	✓	✓	✓																		✓			✓	✓	✓	✓	✓			*
M.H.																																											
E.H.							✓	✓			✓		✓																✓							✓							
F.J.											✓																																
W.J.			✓		✓																								✓													
M.K.							✓	✓	✓			✓	✓																							✓	✓						
C.L.														✓																													
V.L.	✓			✓				✓			✓	✓	✓	✓																												*
E.M.				✓		✓		✓			✓			✓																													
R.M.											✓			✓																✓													
N.M.											✓																			✓													
B.N.				✓				✓	✓			✓	✓																		✓	✓				✓		✓					*
J.N.			✓																																	✓		✓					
J.O.								✓	✓		✓	✓	✓	✓															✓						✓		✓		✓	✓			*
J.O.				✓										✓																✓							✓						
M.O.						✓	✓	✓	✓			✓		✓																						✓	✓		✓				*
H.P.			✓																																							
A.P.								✓					✓																													
M.P.				✓		✓			✓			✓																	✓							✓						*
C.P.								✓																																		
D.P.							✓																																			
H.P.								✓	✓			✓																										✓				*
J.S.								✓	✓					✓																													
J.S.								✓	✓					✓																										✓			*
R.S.																																											
L.S.	✓					✓	✓																					✓							✓							
W.S.																																											
A.S.							✓																													✓						
A.T.								✓	✓			✓	✓	✓														✓	✓		✓	✓			✓	✓		✓	✓	✓		*
V.P.	✓			✓																																						

*- Children chosen for Individual Testing

Grade V B

Group Observations

Report on the States Silent Reading Tests given in Nov. 1932 with the mental ages based on the Kuhlmann-Anderson Tests

Name	C A	M A	I Q	1931-32 Oct.	1931-32 May	1932 A	1932 B	1932 C	1932 D	1932 Av.
H.A.	10-5	10-0	96	9.1	10.2	9.4	10.4	11.4	9.8	10.3
H.A.	9-9	9-10	101	8.4	9.4	9.2	8.6	9.5	9.2	9.1
S.A.	10-11	11-4	104	10.2	12.5	13.1	12.0	16.5	10.9	13.1
M.A.	9-7	9-9	102	8.3	10.3	9.7	8.8	10.0	9.3	9.5
B.A.	11-8	9-8	83	10.0	12.4	15.5	15.5	14.2	15.3	15.1
E.B.	9-5	12-6	133	12.5	17.9	17.0	19.0	15.5	14.0	16.4
D.C.	10-11	12-0	110	11.5	13.1	12.6	13.1	16.0	11.7	13.4
P.C.	9-9	10-9	110	10.5	13.6	16.0	12.0	15.5	10.9	13.6
J.C.						9.2	8.6	12.0	9.6	9.9
J.C.	11-2	10-0	89	9.0	9.6	9.4	9.7	10.4	9.7	9.8
R.C.	10-7	12-5	117	10.9	13.0	12.0	12.6	15.5	12.2	13.1
T.C.	10-7	10-10	102	9.0	9.9	9.0	9.4	10.0	9.9	9.6
B.D.	11-4	10-9	95	9.2	11.9	9.2	9.7	10.8	8.9	9.7
F.D.	11-4	10-9	95	9.2	10.4	9.7	9.7	12.0	10.7	10.5
F.D.	10-8	11-1	104	10.7	15.7	18.0	15.5	19.0	16.3	17.2
M.F.	9-9	10-5	107		9.8	9.4	10.0	14.8	10.6	11.2
M.G.	10-8	10-0	93	11.4	15.7	14.2	10.8	16.0	16.6	14.4
E.G.	10-5	10-8	102	10.1	10.2	9.2	9.4	10.8	9.5	9.7
M.G.	10-1	10-5	103	11.5	14.2	12.6	13.7	14.2	14.4	13.7
R.H.	9-10	10-5	106	10.8	12.4	15.5	13.7	16.0	11.7	14.2
V.H.	10-1	10-2	101	8.9	12.9	10.0	10.8	9.5	10.7	10.3
F.L.	10-0	12-0	120	10.9	12.9	14.2	12.0	11.4	11.3	12.2
G.L.	9-9	12-0	123	11.1	12.2	13.1	13.7	14.2	12.7	13.4
S.M.						17.0	16.0	16.5	16.9	16.6
R.M.	11-5	9-10	86		11.1	14.8	13.1	10.8	12.7	12.9
K.M.	10-1	11-5	113	8.9	10.6	10.4	9.4	9.8	10.0	9.9
E.M.						9.7	9.7	13.7	9.9	10.8
D.M.	9-8	10-4	107		10.2	10.0	10.4	12.6	10.1	10.8
P.N.	12-10	12-1	94	8.8	9.2	9.0	9.2	10.8	9.4	9.6
M.O.	10-1	10-0	99	8.7	9.5	8.6	9.0	10.0	9.2	9.2
R.P.	12-3	10-4	84	9.0	9.9	10.4	10.4	15.5	11.3	11.9
M.P.	10-0	10-10	108	11.2	12.6	13.1	13.7	13.7	10.7	12.8
S.P.	10-11	12-2	111	9.0	9.4	9.2	10.0	12.0	9.9	10.3
C.Q.	10-3	10-0	97	9.3	13.5	12.0	10.4	14.2	9.8	11.6
W.Q.	12-7	11-1	88	9.0	9.4	9.7	9.2	10.0	9.5	9.6
M.R.	10-4	11-9	114	12.8	15.9	15.5	16.0	17.0	14.4	15.7
L.R.	10-4	11-5	110	10.1	11.7	12.0	10.8	12.6	10.4	11.5
M.R.	10-0	10-8	107	9.5	12.8	10.4	10.8	13.7	10.3	11.3
F.S.	10-4	11-7	112	13.8	16.0	16.0	17.0	16.5	19.0	17.1
J.S.						8.8	8.5	8.5	8.8	8.7
E.W.	10-8	11-9	110	9.0	14.7	16.5	12.0	13.7	10.1	13.1
E.W.	9-11	9-11	100	9.1	10.3	9.4	9.4	12.6	10.5	10.5
E.Z.						10.8	10.8	14.2	10.7	11.6

Name	Occasional: Gates C	Occasional: Gates D	Occasional: Tests	Continuous: Gates C	Continuous: Gates D	Continuous: Tests	Audible-Hard Words: Gates C	Audible-Hard Words: Gates D	Audible-Hard Words: Tests	Audible-Easier Words: Gates C	Audible-Easier Words: Gates D	Audible-Easier Words: Tests	Head Movements: Gates C	Head Movements: Gates D	Head Movements: Tests	Facial Reactions: Gates C	Facial Reactions: Gates D	Facial Reactions: Tests	*
H.A.			✓	✓	✓													✓	
H.A.						✓													
S.A.																			
M.A.	✓	✓	✓												✓				
B.A.			✓																
E.B.		✓	✓													✓		✓	*
D.C.																			
P.C.			✓																
J.C.	✓															✓			
J.C.	✓	✓																	
R.C.																			
T.C.																			
B.D.			✓			✓												✓	*
F.D.			✓		✓	✓									✓			✓	
F.D.				✓	✓	✓	✓				✓			✓		✓	✓	✓	*
M.F.			✓			✓												✓	*
M.G.			✓											✓				✓	*
E.G.	✓				✓	✓											✓		
M.G.			✓	✓										✓					*
R.H.			✓	✓													✓	✓	
V.H.				✓	✓	✓				✓	✓		✓	✓					*
F.L.																			
G.L.			✓																
S.M.			✓		✓									✓					
R.M.																			
K.M.			✓	✓	✓			✓	✓				✓				✓		*
E.M.			✓	✓	✓				✓				✓	✓		✓	✓		*
D.M.								✓	✓					✓					
P.N.																			
M.O.	✓								✓					✓					
R.P.																			
M.P.								✓											
S.P.					✓									✓					*
C.Q.									✓										
W.Q.				✓															
M.R.					✓														
L.R.				✓	✓									✓	✓				*
M.R.																			
F.S.																			
J.S.																			
E.W.				✓	✓														
E.W.				✓	✓														
E.Z.				✓										✓			✓		*

* - Children Chosen for Individual Testing

Grade VI B

Report on the Otis Silent Reading Tests given in Nov. 1932 with the mental ages based on the Kuhlmann-Anderson tests

Name	CA	MA	IQ	1931-32 Oct.	1931-32 May	1932 A	1932 B	1932 C	1932 D	Av.
E.B.	11-0	11-9	107	10.1	11.2	10.0	11.4	11.4	10.4	10.8
H.B.	11-0	11-5	104	9.2	10.3	10.4	12.0	10.8	10.3	10.9
S.B.	11-8	11-3	96	12.0	14.8	11.4	13.1	10.8	10.5	11.5
C.C.	14-5	10-10	75	12.1	14.3	10.0	10.8	15.5	9.9	11.6
J.C.	11-9	11-3	96	9.1	10.4	9.0	10.8	10.4	9.8	10.0
G.C.	11-2	11-8	105	9.8	10.3	9.0	10.8	10.4	9.9	10.0
C.C.	12-7	11-3	89	10.9	10.3	10.4	11.4	13.1	10.7	11.4
B.C.	11-6	12-8	110	12.8	13.7	10.0	12.0	16.0	11.3	12.3
R.C.	10-8	12-2	114	11.5	11.7	10.0	13.7			11.9
H.D.	11-0	11-0	100	13.4	13.8	10.8	14.8	13.7	12.7	13.0
A.D.	13-3	12-1	91	10.8	12.1	10.4	13.7	12.6	14.9	12.9
W.D.	10-8	13-10	130	14.4	14.0	12.0	13.7	16.5	14.0	14.1
J.F.	10-10	13-8	126		11.0	9.4	10.8	11.4	10.5	10.5
G.G.	11-8	11-4	97	10.2	10.8	10.0	10.8	14.2	10.7	11.4
F.G.	13-6	11-7	86	15.0	13.4	14.2		16.5	15.7	
R.H.	11-0	10-6	95	9.5	9.9	9.0	10.8	10.4	9.8	10.0
R.H.	11-6	12-8	110			16.5	18.0	17.0	18.8	17.6
M.K.	12-2	13-7	111	12.1	11.5	10.8	13.1	15.5	10.9	12.6
I.K.	11-0	11-11	108	11.8	14.3	14.8	16.5	14.8	15.3	15.4
R.K.	13-9	11-10	86	11.3	11.6	10.4	10.8	12.0	10.9	11.0
J.K.	13-11	10-10	78	9.8	11.4	9.7	12.0	11.4	9.7	10.7
F.K.	12-5	12-8	102		12.3	10.8	13.7	12.6	11.7	12.2
P.K.	11-4	13-1	115		12.1	11.4	13.1	13.7	14.0	13.1
J.L.	10-11	12-2	112	12.5	11.7	9.2	13.1	16.5	14.0	13.2
E.L.	14-6	10-4	72	11.8	13.3	14.8	10.8	10.4	11.7	11.9
T.L.	12-3	11-7	95	17.2	17.2	14.8	19.0	17.0	18.8	17.4
I.M.	12-3	12-5	101	13.5	16.9	15.5	18.0	16.5	16.9	16.7
M.M.	11-3	12-5	110	12.5	13.8	10.4	13.7	14.8	12.7	12.9
C.M.	11-3	12-10	114					16.5	14.0	15.3
E.M.	12-3	11-6	94	10.6	10.1	9.4	9.7	12.0	10.1	10.3
M.M.	11-0	11-11	108	10.2	11.2	10.0	12.6	13.1	10.7	11.6
E.M.	12-2	10-9	88	10.2	11.6	9.4	11.4	10.0	10.6	10.4
J.M.	11-6	11-10	103			11.4	13.7	14.8	12.2	13.0
D.M.	11-7	11-11	103	10.5	11.1	10.4	13.7	12.0	10.7	11.7
R.O.	12-9	12-3	96	11.0	11.2			12.0	11.3	11.7
A.P.				9.9	10.7					
B.P.	11-8	12-0	103	12.9	11.9	10.4	13.7	18.0	14.0	14.0
D.P.	11-11	12-2	102			10.8	13.7	16.5	15.3	14.1
N.R.	11-0	11-1	101	11.5	11.8	13.7	13.7			13.7
B.R.	12-3	12-4	101	10.7	11.3	9.7	13.7	15.5	12.2	12.8
G.S.	10-7	12-3	116	13.3	14.9	10.4	13.7	14.2	11.7	12.5
E.S.	11-5	12-7	110	10.5	10.9	9.4	10.0	13.1	10.4	10.7
D.W.	11-1	11-0	99	13.4	13.8	12.0	12.6	13.7	10.6	12.2

Group Observations

Occasional: ✓ Otis; ✓ Tests; Penmanship; Spelling; Arithmetic; Hist.-Read.; Story-Read.; Petty-Read.

Continuous: ✓ Otis; ✓ Tests; Penmanship; Spelling; Arithmetic; Hist.-Read.; Story-Read.; Petty-Read.

Audible-Hard Words: ✓ Otis; ✓ Tests; Penmanship; Spelling; Arithmetic; Hist.-Read.; Story-Read.; Petty-Read.

Audible-Every Word: ✓ Otis; ✓ Tests; Penmanship; Spelling; Arithmetic; Hist.-Read.; Story-Read.; Petty-Read.

Head Movements: ✓ Otis; ✓ Tests; Penmanship; Spelling; Arithmetic; Hist.-Read.; Story-Read.; Petty-Read.

Facial Reactions: ✓ Otis; ✓ Tests; Penmanship; Spelling; Arithmetic; Hist.-Read.; Story-Read.; Petty-Read.

Name	Occasional: ✓ Otis	✓ Tests	Penmanship	Spelling	Arithmetic	Hist.-Read.	Story-Read.	Petty-Read.	Continuous: ✓ Otis	✓ Tests	Penmanship	Spelling	Arithmetic	Hist.-Read.	Story-Read.	Petty-Read.	Audible-Hard Words: ✓ Otis	✓ Tests	Penmanship	Spelling	Arithmetic	Hist.-Read.	Story-Read.	Petty-Read.	Audible-Every Word: ✓ Otis	✓ Tests	Penmanship	Spelling	Arithmetic	Hist.-Read.	Story-Read.	Petty-Read.	Head Movements: ✓ Otis	✓ Tests	Penmanship	Spelling	Arithmetic	Hist.-Read.	Story-Read.	Petty-Read.	Facial Reactions: ✓ Otis	✓ Tests	Penmanship	Spelling	Arithmetic	Hist.-Read.	Story-Read.	Petty-Read.	*
E.B.							✓				✓																																								*
H.B.																																																	
S.B.								✓																																									
C.C.																																																
J.C.								✓																																									
G.C.																✓								✓																										
C.C.									✓	✓																																							
B.C.						✓			✓	✓	✓	✓																							✓													*
R.C.																✓								✓																										
H.D.																																																	
A.D.					✓	✓	✓	✓	✓	✓																		✓	✓																				*
W.D.	✓	✓			✓		✓	✓			✓	✓	✓																																			*
J.F.								✓	✓	✓	✓	✓	✓	✓														✓	✓																				*
G.G.																																																
F.G.		✓				✓	✓				✓					✓							✓																										*
R.H.																																																
R.H.																																																
M.K.																✓																																	
I.K.	✓																																															
R.K.																																																
J.K.			✓						✓	✓								✓	✓	✓	✓	✓	✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	*
F.K.		✓	✓						✓																	✓				✓																		
P.K.																											✓																					
J.L.	✓						✓						✓	✓													✓																					*
E.L.							✓	✓																				✓																				
T.L.	✓									✓																																						
I.M.	✓									✓																																						*
M.M.										✓	✓																																				
C.M.																																															
E.M.		✓														✓																																*
M.M.																																															
E.M.													✓	✓	✓																																*
J.M.																																															
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R.O.																																															
A.P.																																															
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D.P.																																															
N.R.																																															
B.R.											✓																																				
G.S.			✓	✓																																											*
E.S.																																															
D.W.																																															

* - Children chosen for Individual Testing

Individual Testing

Reports on the Gates Silent Reading Tests given in Nov. 1932 with the mental ages based on the Kuhlmann-Anderson Tests 1931-32

Name	CA	MA	IQ	Oct / March	May	A	B	C	D	Av.
Gr. II B							Type	II	III	
A. L.	6-9	7-5	110	6.73	7.40			7-0	7-5	7-3
P. C.	7-9	8-6	110	6.32	7.60			8-6	8-2.5	8-5
C. H.	5-9	8-10	153	6.00	7.90			7-1	8-8.2	7-11
R. G.	7-1	8-6	120	6.88	7.40			7-10	8-8.5	8-1
R. H.	7-8	9-6	124	7.18	7.85			7-11	8-0	8-0
B. G.	6-8	7-4	110	6.75	7.15			7-11	8-7	8-3
J. K.	7-0	6-2	88		6.00			6-9.5	7-1	7-0
H. M.	7-7	8-11	118	7.05	7.10			7-7	8-2.5	7-11
P. S.	6-8	8-1	121	7.10	6.90			7-6	7-10	7-8
J. M.	7-0	9-1	130	7.40	7.10			7-7.5	7-6	7-7
D. W.	8-6	6-10	80	7.23	7.80			7-11	8-8.2	8-4
W. S.	6-9	8-1	120	6.80	7.50			6-8.5	7-3	7-0
Gr. III B										
R. C.	8-7	8-11	104	7.43	8.68	8.5	9.2	8.0	8.3	8.5
G. L.	8-8	11-2	129	7.88	9.05	9.0	9.4	9.8	9.6	9.5
D. D.	8-4	8-6	102	7.40	8.55	8.3	8.0	8.5	8.5	8.3
J. M.	8-8	8-5	97	7.35	8.80	8.5	8.3	8.9	8.3	8.5
J. L.	8-3	9-5	114	8.80	9.30	9.7	9.4	10.0	10.3	9.9
P. N.	8-5	8-8	103	7.65	8.90	8.6	8.8	10.0	10.0	9.4
D. R.	8-3	10-5	126	7.63	8.95	8.6	8.5	8.5	8.0	8.4
J. S.	7-7	7-7	100	7.10	8.45	8.6	8.8	9.5	9.4	9.1
A. S.						8.8	9.0	8.5	8.5	8.7
C. T.	8-0	9-5	118	8.25	9.20	10.4	10.4	12.6	11.7	11.3
H. W.	8-3	10-0	121			9.2	8.8	9.5	9.7	9.3
J. L.	7-10	8-6	108	7.98	8.55	9.4	9.2	8.0	9.4	9.0
Gr. IV B										
J. C.	9-8	8-7	89	8.6	9.9	9.2	8.6			8.9
B. N.	9-8	8-10	102	9.1	9.8	9.7	9.7	8.5	8.7	9.2
J. O.	9-8	8-10	92	8.8	9.2	9.7	9.0	8.6	9.1	9.1
M. O.	9-5	10-4	110	8.5	9.0	9.2	8.6	11.4	9.4	9.7
M. P.	9-5	8-8	92	8.7	8.9	9.2	8.6	8.9	9.6	9.1
A. F.	9-5	8-1	86	8.6	9.4	9.7	9.4	9.5	9.2	9.5
A. T.	8-10	10-0	113	8.8		12.0	12.6	12.0	12.7	12.3
E. G.	9-2	7-10	85	8.9	9.8	9.7	9.7	9.8	9.5	9.7
V. L.			8			8.8	9.0	10.4	9.2	9.4
C. B.	11-2	10-0	89	8.5	9.0	9.0	8.5	8.5	9.4	8.9
L. P.	10-4	9-9	94	8.7	9.5	9.2	8.6	10.8	9.4	9.5
J. S.	10-7	9-5	89	8.3	9.2	9.4	9.0	10.8	9.5	9.7

Oral Reading

Name	Time	Phrasing	Errors	Comprehension
Gr. II B				
A. L.	2m.	F Jerky+broken	S of w	E
P. C.	1m. 20s.	F Jerky+broken	S of w	VG
C. H.	1m. 55s.	F Jerky+broken	none	VG
R. G.	2m.	F Jerky	S of w	F
R. H.	3m. 56s.	P Very broken	S of w - po	F
B. G.	1m. 25s.	VG	none	G
J. K.	2m. 33s.	P Very broken	S of w - po	F
H. M.	1m. 48s.	F Jerky	S of w	VG
P. S.	1m. 50s.	F Jerky+broken	O of w	G
J. M.	2m. 8s.	F Jerky+broken	S of w	G
D. W.	1m. 31s.	F Jerky+broken	none	VG
W. S.	3m.	F Jerky+broken	S of w	P
Gr. III B				
R. C.	3m. 1s.	P Very jerky	S of w	VG
G. L.	1m. 16s.	VG Smooth	none	E
D. D.	2m. 51s.	F Jerky	S of w	G
J. M.	1m. 43s.	G	po	E
J. L.	1m. 24s.	VG Smooth	S of w - m of w	E
P. N.	1m. 15s.	VG Smooth	none	E
D. R.	1m. 38s.	F Jerky+broken	none	VG
J. S.	1m. 21s.	F Jerky	S of w - po	E
A. S.	1m. 37s.	F Jerky+broken	none	VG
C. T.	1m. 10s.	VG Smooth	none	E
H. W.	1m. 35s.	G Smooth	S of w - Fe	E
J. L.	49s.	VG	none	G
Gr. IV B				
J. C.	2m. 14s.	F Jerky+broken	S of w - po	G
B. N.	3m. 22s.	P Very Jerky	S of w	G
J. O.	2m.	P Very Jerky	S of w	G
M. O.	1m. 33s.	G	none	G
M. P.	1m. 35s.	VG Smooth	none	E
A. F.	1m. 40s.	F Jerky	none	G
A. T.	1m. 26s.	F Jerky	none	G
E. G.	1m. 12s.	F Jerky	none	VG
V. L.	2m. 17s.	F Jerky+broken	none	E
C. B.	2m. 15s.	F Jerky	none	VG
L. P.	1m. 52s.	G	none	VG
J. S.	2m.	F Jerky+broken	none	VG

Silent Reading - Natural

Name	Time	Habits	Comprehension
Gr. II B			
A. L.	1m. 42s.	c|m - aew - smofh - fr	E
P. C.	1m. 15s.	c|m - Smofh - fmofh	VG
C. H.	1m. 48s.	o|m - smofh - re	VG
R. G.	1m. 45s.	c|m - aew - smofh	F
R. H.	3m. 40s.	c|m - ahw - smofh	F
B. G.	1m. 20s.	o|m EP3 - smofh	G
J. K.	2m. 18s.	c|m - smofh - ahw	F
H. M.	1m. 21s.	o|m EP3 - smofh	VG
P. S.	1m. 20s.	c|m - ahw - smofh	G
J. M.	1m. 56s.	o|m EP3 - smofh - FT	VG
D. W.	1m. 12s.	o|m	VG
W. S.	3m. 18	c|m - aew - smofh - fr-sm	F
Gr. III B			
R. C.	2m. 37s.	c|m - smofh - fmofh	VG
G. L.	1m. 13s.	smofh	E
D. D.	2m. 42s.	c|m - smofh - aew	G
J. M.	1m. 24s.	o|m - fmofh	E
J. L.	1m.	c|m - smofh - re	E
P. N.	1m. 5s.	none	E
D. R.	1m. 29s.	o|m - smofh - fmofh	VG
J. S.	1m.	o|m - smofh	E
A. S.	1m. 22s.	o|m - smofh - fmofh - fr	VG
C. T.	50s.	smofh	E
H. W.	1m. 31s.	c|m - aew - smofh - fmofh	E
J. L.	46s.	smofh - sm	G
Gr. IV B			
J. C.	1m. 45s.	c|m - smofh - fr	G
B. N.	3m. 14s.	c|m - fmofh - re	G
J. O.	1m. 34s.	c|m - smofh - re	G
M. O.	1m. 22s.	o|m EP3 - smofh	G
M. P.	1m. 30s.	smofh - MT	E
A. F.	1m. 12s.	c|m - smofh	G
A. T.	49s.	smofh	E
E. G.	1m. 3s.	o|m EP3 - fmofh	VG
V. L.	2m. 10s.	o|m - smofh - fmofh	E
C. B.	1m. 37s.	smofh - c|m -	VG
L. P.	1m. 40s.	c|m - smofh - fr	VG
J. S.	1m. 39s.	o|m EP3 - smofh - fr	VG

Silent Reading - Controlled

Name	Time	Habits	Comprehension
Gr. II B			
A. L.	1m. 40s.	fr - sm - lips quiver	VG
P. C.	1m. 15s.	o|m	VG
C. H.	2m.	o|m - smofh	VG
R. G.	2m. 45s.	o|m EP3 - ahw	F
R. H.	3m. 40s.	o|m - smofh	G
B. G.	1m. 20s.	sm	G
J. K.	2m. 5s.	o|m - ahw - smofh	F
H. M.	2m. 8s.	none	VG
P. S.	1m. 22s.	smofh - sm	G
J. M.	1m. 45s.	smofh	VG
D. W.	1m. 18s.	none	VG
W. S.	3m. 5s.	o|m EP3 - Smofh - fr	P
Gr. III B			
R. C.	3m. 1s.	o|m EP3	VG
G. L.	1m. 13s.	none	E
D. D.	2m. 18s.	o|m EP3 - ahw - pinched lips	G
J. M.	1m. 37s.	none	G
J. L.	1m.	none	E
P. N.	55s.	smile - none	E
D. R.	1m. 25s.	none	G
J. S.	1m.	none	VG
A. S.	1m. 25s.	none	VG
C. T.	52s.	none	E
H. W.	1m. 21s.	smile	E
J. L.	46s.	none	G
Gr. IV B			
J. C.	2m. 3s.	c|m - fmofh - tongue out	G
B. N.	3m. 15s.	o|m	F
J. O.	1m. 18s.	HT	G
M. O.	1m. 25s.	smofh	F
M. P.	1m. 50s.	none	VG
A. F.	1m. 2s.	o|m EP3	G
A. T.	49s.	none	E
E. G.	1m. 25s.	none	G
V. L.			VG
C. B.	1m. 42s.	o|m	G
L. P.	1m. 30s.	o|m EP3	G
J. S.	1m. 45s.	o|m EP3	VG

m - minute
s - second
E - Excellent
VG - Very Good
G - Good
F - Fair
P - Poor
FT - Face Twisting
MT - Mouth Twisting
HT - Head Twisting
re - raised eyebrows
Sm - Smile
fr - frowning
s of w - substitution of words
o of w - omission of words
m of w - mispronunciation of words
po - punctuation overlooked
fe - faulty enunciation
aew - audible every word
ahw - audible hard words
o\|m - occasional lip-movements
c\|m - continuous lip-movements
EP3 - Especially paragraph 3
sm of h - sideo movement of head
fm of h - forward movement of head

Individual Testing

Report on the Gates Silent Reading Tests given in Nov. 1932 with the mental ages based on the Kuhlmann-Anderson Tests 1931-32

Name	CA	MA	IQ	Oct.	May	A	B	C	D	Av.	Oral Reading: Time	Phrasing	Errors	Comprehension	Silent Reading - Natural: Time	Habits	Comprehension	Silent Reading - Controlled: Time	Habits	Comprehension
7A VIB																				
E.Z.						10.8	10.8	14.2	10.7	11.6	1m. 24s.	E Smooth	S of w - m of w	E	1m. 19s.	clm	E	1m. 13s.	none	E
S.P.	10-11	12-2	111	9.0	9.4	9.2	10.0	12.0	9.9	10.3	2m. 22s.	P Very Jerky	S of w - m of w	E	1m. 53s.	sm of h - fr	E	1m. 50s.	sm of h - fr - MT	E
L.R.	10-4	11-5	110	10.1	11.7	12.0	10.8	12.6	10.4	11.5	1m. 50s.	F Jerky + broken	S of w	G	1m. 13s.	clm	G	1m. 3s.	none	G
K.M.	10-1	11-5	113	8.9	10.6	10.4	9.4	9.8	10.0	9.9	2m.	F Jerky + broken	S of w - m of w	VG	1m. 16s.	clm - sm of h - fr	VG	1m. 23s.	sm of h - fr	VG
V.H.	10-1	10-2	101	8.9	12.9	10.0	10.8	9.5	10.7	10.3	1m. 30s.	VG	none	E	1m. 12s.	sm of h	E	1m. 16s.	none	E
E.B.	9-5	12-6	133	12.5	17.9	17.0	19.0	15.5	14.0	16.4	1m. 10s.	VG Smooth	none	E	35s.	none	E	38s.	Smile	E
B.D.	11-4	10-9	95	9.2	11.9	9.2	9.7	10.8	8.9	9.7	1m. 41s.	G	S of w	E	1m. 25s.	clm - sm of h	G	1m. 29s.	none	G
F.D.	11-4	10-9	95	9.2	10.4	9.7	9.7	12.0	10.7	10.5	1m. 10s.	E	none	E	1m.	none	VG	1m.	none	VG
M.G.	10-1	10-5	103	11.5	14.2	12.6	13.7	14.2	14.4	13.7	1m. 52s.	VG Smooth	S of w	VG	1m. 3s.	clm EP3 - sm of h	F	1m. 1s.	none	F
M.F.	9-9	10-5	107		9.8	9.4	10.0	14.8	10.6	11.2	2m. 31s.	VG Smooth	S of w - I of w	E	1m. 36s.	clm EP3	E	1m. 43s.	none	E
E.M.						9.7	9.7	13.7	9.9	10.8	1m. 42s.	VG Smooth	S of w	F	1m. 19s.	sm of h - fm of h - MT	F	1m. 24s.	none	F
M.G.	10.8	10-0	93	11.4	15.7	14.2	10.8	16.0	16.6	14.4	2m. 3s.	G	none	VG	1m. 21s.	clm	VG	1m. 37s.	none	VG
8A VIB																				
B.C.	11-6	12-8	110	12.8	13.7	10.0	12.0	16.0	11.3	12.3	2m. 2s.	G Smooth	m of w	VG	1m. 22s.	sm of h - fm of h	G	1m. 26s.	none	G
J.F.	10-10	13-8	126		11.0	9.4	10.8	11.4	10.5	10.5	1m. 40s.	F Jerky	S of w	VG	1m. 20s.	clm EP3 - sm of h - fr	G	1m. 23s.	clm EP3 - sm of h	G
A.D.	13-3	12-1	91	10.8	12.1	10.4	13.7	12.6	14.9	12.9	2m. 33s.	F Jerky	S of w - o of w	G	1m. 34s.	clm EP3 - fr	G	1m. 43s.	fr	VG
I.M.	12-3	12-5	101	13.5	16.9	15.5	18.0	16.5	16.9	16.7	1m. 49s.	VG	m of w	G	1m. 1s.	clm - sm of h	G	50s.	none	F
F.G.	13-6	11-7	86	15.0	13.4	14.2		16.5	15.7		2m. 10s.	G	m of w	VG	1m. 12s.	clm - sm of h - re	VG	1m. 11s.	none	VG
W.D.	10-8	13-10	130	14.4	14.0	12.0	13.7	16.5	14.0	14.1	1m. 58s.	VG	m of w	VG	1m. 20s.	fr - re	VG	1m. 20s.	re	VG
G.S.	10-7	12-3	116	13.3	14.9	10.4	13.7	14.2	11.7	12.5	1m. 49s.	E	none	E	1m. 10s.	clm - fr - re	E	1m. 25s.	fr - re	E
E.B.	11-0	11-9	107	10.1	11.2	10.0	11.4	11.4	10.4	10.8	2m. 45s.	G Smooth	m of w - r of w	E	2m. 7s.	clm - sm of h	E	1m. 56s.	none	E
E.M.	12-3	11-6	94	10.6	10.1	9.4	9.7	12.0	10.1	10.3	2m. 35s.	F	m of w - S of w	G	2m. 15s.	clm - sm of h - fr	G	2m. 23s.	clm - fr	G
J.L.	10-11	12-2	112	12.5	11.7	9.2	13.1	16.5	14.0	13.2	1m. 35s.	G	S of w -	G	1m. 20s.	sm of h	G	1m. 18s.	none	G
E.M.	12-2	10-9	88	10.2	11.6	9.4	11.4	10.0	10.6	10.4	3m. 5s.	VG F	S of w - m of w	VG	1m. 54s.	sm of h - fr - MT	VG	2m.	MT	VG
J.K.	13-11	10-10	78	9.8	11.4	9.7	12.0	11.4	9.7	10.7	2m. 15s.	Jerky	S of w - r of w	G	1m. 48s.	clm - sm of h - fr	G	1m. 52s.	sm of h	G

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E - Excellent
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